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Local Modeling and Empirical Distribution

Edited by

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Preface

Philipp Weisser

The term 'switch-reference marking' was introduced by Jacobsen (1967) to describe a system of referential tracking. According to his original definition, switch-reference *"consists in the fact that a switch in subject or agent [...] is obligatorily indicated in certain situations by a morpheme, usually suffixed, which may or may not carry other meanings in addition."* (Jacobsen 1967:268) A typical example is given in (1) from the Papuan language Kâte. As shown by the gloss (SS indicating a same-subject relation, DS a different-subject relation), markers on every verb indicate whether its suject is identical to the subject of the immediately following verb.

(1) Kâte (Trans-New-Guinea); Pilhofer (1933) (as cited in Bickel (2011))

ra fisi-pie fahare-râ yâpeʔ-yopa-pie
go arrive-SEQ.3pDS rise-SEQ.SS chase.away-3pDO-SEQ.3pDS
mafa-yeŋiʔ behe-râ wise-pie fiuʔ
stuff-3pPOSS throw.away-SEQ.SS flee-SEQ.3pDS illicitly
ro=fâre-mbiŋ.
take=all-3pREMOTE.PAST

'When they$_i$ (the foreigners) arrived, they$_j$ (the villagers) got up and chased them away. They$_i$ threw away their stuff and fleed. Then, they$_j$ stole their stuff.'

The phenomenon of switch-reference is interesting from an empirical as well as a theoretical perspective. Empirically, it is still an understudied topic as the definitions and generalizations are often blurred and not fully understood. Theoretically, the fact that the reference of both subjects has to be taken into account to determine the form of the switch-reference morpheme constitutes a non-local dependency. Since such non-local dependencies are often considered to be undesirable in syntax in general (cf. discussion in Alexiadou et al. (2012)) quite a lot of theoretical

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literature on switch-reference circled around the question of how this non-local dependency could be modeled in different syntactic frameworks (for a discussion, see Finer (1984, 1985), Roberts (1988), Broadwell (1997), McKenzie (2011)).
This volume contains several papers which try to shed some light on this topic, either from a typological or from a theoretical point of view:
Doreen Georgi shows that the movement theory of control (Boeckx et al. (2010)) can be used to derive same-subjects relations between clauses. The subject of the embedded clause moves to the subject position of the matrix clause. The same-subject marker is a reflex of this movement on the embedded T-head. In different-subject contexts, there is no cross-clausal movement of the embedded subject and hence a different morphological reflex. The non-local dependency is derived via successive-cyclic movement. Anke Assmann takes a look at Quechuan languages and argues that their switch-reference system is best analysed as a tense agreement relation (cf. also Camacho (2010)) between the matrix clause and the subordinate clause. Same-subject marking is the result of a tense agreement relation between both clauses. Such an agreement relation, however, is only possible when both subjects are identical in reference. The different-subject marker is the realization of a failed agreement relation. Here, the non-local dependency is derived via agreement. Stefan Keine argues that clauses that involve switch-reference marking are to be reanalysed as coordination structures. Following his analysis, switch-reference marking is the context-sensitive spell-out of a coordination head. Same-subject marking is the coordination head conjoining two VPs, which do not contain a subject, and different-subject marking is coordination of two *v*Ps, each of which contains its own subject. In his reanalysis, there is no non-local dependency. Katja Barnickel & Andreas Opitz show that even though languages like German do not exhibit switch-reference marking morphologically, the identity or non-identity of subjects between a matrix and a subordinate clause still plays a role in syntax, namely with respect to the order of both clauses. Based on a corpus study, they show that subordinate clauses in German more preferably precede the matrix clause if both clauses have different subjects. It follows the matrix clause if the subjects are identical. Philipp Weisser addresses the very general question in which syntactic contexts we find switch-reference marking. He takes a close look at all the languages which have been claimed to show switch-reference marking in coordinated clauses and argues that what we find in these languages is a similiar but still distinct mechanism, namely tight vs. loose coordination, a phenomenon already well-attested in Oceanic languages.
It should be noted that all of the contributions in this volume heavily benefited from the activities and discussions within the DFG-project ”Local modeling of non-local dependencies in syntax” and the workshop ”The Fine Structure of Grammatical Relations” (held as part of the DFG-Forschergruppe 742 ”Grammatik und Verarbeitung verbaler Argumente”).

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Switch-Reference by Movement

Doreen Georgi*

Abstract

This paper deals with a reference tracking system in which a marker indicates whether two clauses have a coreferent subject or not: Switch reference. I argue that obligatory control and same subject contexts in Switch reference languages have some properties in common. I therefore adopt the movement theory of obligatory control (cf. Boeckx et al., 2010) and develop a similar analysis for same subject environments: There is only a single DP which is moved from the marking clause to the reference clause. The morphological marker is analysed as the realization of T in an embedded clause which is sensitive to whether this movement has applied or not, but it is no longer a marker that tracks referential identity. In this way, indices and binding principles that are needed to account for referential (non-)identity in the traditional analysis of the phenomenon can be dispensed with. Furthermore, it is shown that characteristic cross-linguistic properties and some non-canonical instances of Switch reference follow from the analysis.

1. Introduction

Switch reference (SR) is a term introduced by Jacobsen (1967) that refers to a reference tracking system in which markers encode whether the subject of a verb α is coreferent with the subject of a verb β. Coreference and non-coreference are realized by a *same subject* marker (SS) and a *different subject* marker (DS), respectively. These markers occur in only one of the clauses that are involved and are either verbal affixes or independent morphemes. The clause which exhibits the SR marking is called *marking clause*, the other clause is called *reference clause*. An example from Ancash Quechua is given in (1). The verbal suffix in the adjunct clause indicates whether the subject of the adjunct (the marking clause) is referentially identical to that of the reference clause.

*For discussion of Switch reference I would like to thank the participants of the course on *Local Modelling of Non-Local Dependencies in Syntax* at the University of Leipzig (summer term 09): Anke Assmann, Stefan Keine, Gereon Müller and Philipp Weisser; furthermore, I thank the participants of the workshop 'The Fine Structure of Grammatical Relations' (December 2010, Leipzig) for their comments. This paper is a revised version (June 2012) of the original manuscript from 2009.

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(1) *SR in Ancash Quechua (Cole, 1983, 2, 3):*

a. Lima-ta chaa-ri-r rikaari-shaq amigu-u-ta
Lima-ACC arrive-after-SS see-FUT.1 friend-my-ACC
After arriving in Lima, I will see my friend.

b. chakra-chaw urya-pti-i María palluma-rqu-n wayta-kuna-ta
field-in work-DS-1 María pick-REC.PST-3 flower-PL-ACC
While I worked in the field, María picked flowers.

In this paper I develop an account of SR that does not rely on binding as the classic analyses do (cf. Finer, 1985; Watanabe, 2000). Instead, I propose that in same subject contexts there is indeed only a single DP that is moved from the marking clause to the reference clause. In section 2 I present the cross-linguistic properties of Switch reference. In section 3 I discuss similarities between SR and obligatory control and I show how the movement analysis developed for the former can derive the characteristics of SR, with only minor theoretical adaptations. Finally, the focus is on the morphological expression of referential (non-)identity and I claim that the SR marker is not a reference tracking marker at all. Cases that seem to deviate from the canonical SR system are discussed in section 4.

2. Characteristics of Switch Reference

In their introduction, Haiman and Munro (1983) sum up a number of cross-linguistic properties and tendencies of SR. Note that these are not universals. Some exceptions will be discussed in subsequent sections. These properties include the following:

1. The notion of *subject* that SR is sensitive to is strictly syntactic and not semantic or pragmatic, viz. SR does not track the referential identity of topics or agents, but only of the structurally highest argument that passes subjecthood tests (which may of course coincide with the topic or agent). Even in morphologically ergative languages like Inuktitut with an ergative pattern of case marking (Pittman, 2005) it is the external argument of a transitive verb (termed A argument by Comrie (1978, 1989); Dixon (1994)) and the sole argument of an intransitive verb (S argument) that are involved in the reference system, hence an SR accusative pattern arises. Consider the following example from Inuktitut (Pittman, 2005, 4)

(2) Alana-up ujagak atja-tlu-gu ani-vuk
Alana-ERG rock-ABS carry-SS-3SG go.out-INTR.INDIC.3SG
While Alana$_i$ was carrying the rock$_j$, she$_{i/*j/*k}$ went out.

2. SR only tracks the referential (non-)identity of subjects in the sense of point 1; i.e. an SR morpheme does not express whether the subject of clause α is the same as the object of clause β, or that the objects of α and β are (non)-coreferent. There are only very few known exceptions.

3. SS marker are often phonologically zero elements or invariant morphemes, whereas DS markers are fused with subject agreement morphemes or are even identical to those (in the latter case SS is encoded by absence of agreement). DS markers are thus morphologically more complex than SS markers, sometimes even augmented versions of SS markers (see also Comrie (1983, 25), Pittman (2005, 8), Déchaine and Wiltschko (2002)).

   In Ancash Quechua, for example, the SS marker is the invariant suffix *-shpa*. The verb *urya* in the marking clause does not show agreement affixes that the verb in the reference clause bears. In contrast to this, the DS marker in (3-b) is followed by a morpheme that cross-references the subject of *urya*.

   (3) *SR in Ancash Quechua (Cole, 1983, 3):*

   a. chakra-chaw urya-shpa pallamu-rqu-u wayta-kuna-ta
   field-in work-SS pick-REC.PST-1 flower-PL-ACC
   While I worked in the field, I picked flowers.

   b. chakra-chaw urya-pti-i María palluma-rqu-n
   field-in work-DS-1 María pick-REC.PST-3
   wayta-kuna-ta
   flower-PL-ACC
   While I worked in the field, María picked flowers.

   In Seri, the SS marker is Ø and the DS marker is an independent morpheme *ta* (realis) or *ma* (irrealis), see the examples in (4) (Moser (1978, 114), Farrell et al. (1991, 433, 434)).

   (4) *SR markers in Seri*:

   a. mi-nail kom m-po-k-iːxk (*ta)-X ʔataːp
   2PL-skin the 2SG.S-IR-AUG-wet DS-UT mucus
   ko-m-si-aː ʔa=ʔa
   3OB-2SG.S-IR-be AUX=DECL
   If you wet your skin, you will get a cold.

   b. ʔim-t-kaşni *(ma) ʔp-yo-oːʔa
   1SG.O-R-bite DS 1SG.S-DI-cry
   Since it bit me, I cried.

4. In SS contexts the subject can occur in only one of the clauses, that is to say

in the reference clause. The realization in both the reference clause and the SS marking clause leads to ungrammaticality. In DS contexts, however, the different subjects are all realized, each in its clause (apart from pro-drop, of course).

This fact is often left implicit in the descriptions, but one can see in the data that in SS contexts the subject is not repeated. Compare also the Ancash Quechua data in (3-a). Of course, this does not yet tell us that it is impossible to repeat the subject in the marking clause. There are, however, several explicit statements that this leads to ungrammaticality. Hyman (1981) claims that for Noni (quotation taken from Wiesemann (1982, 52)): "[. . .] in DS clauses there is always a subject, preceded or followed by the DS marker [. . .] in SS clauses there is never a subject [. . .]". Wiesemann (1982) states the same for another Bantu language, Bafut, and Nichols (1983, 248, 250) alleges that in Chechen and Ingush "[t]he -*na* form [the SS marker, DG] virtually requires that Equi apply; and it requires that a conjunct-clause zero be interpreted as Equi-deleted.". Camacho (2010c, section 3.6) shows the same for Shipibo.

5. SR can occur in subordination, including embedded argument clauses and adjunct clauses. Whether there is SR in coordination is still a matter of debate (cf. Weisser (this volume) and references cited there, see also Keine (this volume)). With respect to subordination, SR marking can only appear in the subordinate clause but never in the matrix clause. With respect to coordination, the SR marker can occur only once, not in every conjunct (in the alleged cases of SR in coordination).

6. Very often, marking clauses in SS contexts lack their own tense/aspect/mood morpheme (see also Moser (1978, 114), Nichols (1983, 246), Camacho (2010c, 247), Pittman (2005, 3), Stirling (1993, 6) among others). They are dependent on the values of their reference clause that determines these values. This means that if SR is expressed by a bound verbal morpheme, there are fewer morphemes attached to an SS marked verb than to a DS or independent verb. This is most obvious in languages which distinguish between medial (or dependent) verbs and final (or independent) verbs, especially Papuan languages, in that only medial verbs show SR marking. Medial verbs show less inflectional markers than final verbs and therefore depend on the latter, i.e. they cannot be used as independent units (Franklin, 1983,

39)[1]. In Kewa, for example, final verbs inflect for person and number of their subject, whereas SS medial verbs carry an invariable suffix *-a*, regardless of the ϕ-features of their subject, see (5). Medial DS verbs inflect for person and number of their subject, too, but the forms are different from those of final verbs, see (6). In Amele, both final and medial verbs show ϕ-agreement, but medial verbs lack tense/aspect markers that final verbs bear, see the distribution of the past marker TOD.PST 'today's past' in (7). A similar pattern can be found in Kobon: Only independent verbs show SR marking (Comrie, 1983, 19-20), but they lack tense/aspect/mood distinctions that independent verbs bear.

(5) *SS in Kewa (Franklin, 1983, 40)*:

a. ni piru-a na-wa
I sit.down-SS eat-1SG
I sat down and ate.

b. ne piru-a na-e
you sit.down-SS eat-2SG
You sat down and ate.

c. nipu piru-a na-a
he sit.down-SS eat-3SG
He sat down and ate.

(6) *DS in Kewa (Franklin, 1983, 40)*:

a. ni piru-no na-a
I sit.down-DS.1SG eat-3SG
I sat down and he ate.

b. ne piru-ina na-a
you sit.down-DS.2SG eat-3SG
You sat down and he ate.

c. nipu piru-na na-a
he sit.down-DS.3SG eat-3SG
He$_i$ sat down and he$_j$ ate.

(7) *SR in Amele (Roberts, 1988, 49):*

a. ija hu-m-ig sab j-ig-a
1SG come-SS-1SG food eat-1SG-TOD.PST
I came and ate the food.

[1]Final verbs are called 'final' because they follow all medial verbs in a complex sentence and appear as the rightmost verbal form.

b. ija ho-co-min sab ja-g-a
1SG come-DS-1SG food eat-2SG-TOD.PST
I came and you ate the food.

Another example of deficient agreement morphology in SS contexts comes from Inuktitut. Usually, a transitive verb agrees with both of its arguments (see (8-a)), but when the verb bears the SS marker, it only agrees with its object (see (8-b)). Hence, the subject involved in the reference tracking system cannot agree with the verb. Besides, SS clauses lack their own tense and are interpreted as simultaneous to the action in the reference clause (Pittman, 2005, 5).

(8) *Agreement and SR interaction in Inuktitut (Pittman, 2005, 4)*:

a. anguti-up arnaq kunik-taa
man-ERG woman.ABS kiss-PART.3SG/3SG
The man is kissing the woman.

b. Arna-p atisassat irrur-lu-git irinarsur-puq
woman-ERG clothes.ABS wash-SS-3PL sing-INTR.INDIC.3SG
While woman$_i$ was washing the clothes, she$_i$ sang.

7. SR marking obeys syntactic locality restrictions. A marking clause is marked with DS or SS in comparison to the closest subject, viz. the subject of the immediately superordinate (or coordinate) clause and it cannot ignore an intervening subject. This locality restriction does not rely on linear adjacency, instead SR marking reflects hierarchical organization (Gordon, 1983; Finer, 1985). Consider the example in (9) from Seri (Finer, 1985, 42). All '*it*'s are coreferent in this example, however there is DS marking between the first and second and the second and third clause, because the subject of the second clause is *he*.

(9) taaX iti t-ap ma / yaX kix an i-t-atni ma / ik-attaX
there on DP-stand DS / belly pos in 3OBJ-DP-hit DS / inf-GO
i-t-k^{w}aa / ta ʔak iti t-ap ma /
3OBJ-DP-NEG.know / there SPEC in DP-stand DS /
k^{w}ʔa-mii-škam
3REF.1PL.SUBJ-PERF-arrive.PL
When it$_i$ stood there, after he hit it$_i$ in the belly, it$_i$ could not move, it$_i$ stood over in that place, we arrived to where it$_i$ was.

In the following Maricopa example (Gordon, 1983, 93) the verb *yem* is marked for having the same subject as the final verb *yaa* although they are

not linearly adjacent. But note that they are structurally adjacent because the sequence *ʔ-nʔay ntay-sh ʔayuu rav* is a reason clause that is syntactically and semantically subordinated to the final verb.

(10) vakpaly ʔ-yem-k ʔ-nʔay ntay-sh ʔayuu rav-m ʔ-yaa-uum
Phoenix 1-go-SS 1-father mother-SUBJ s.t. hurt-DS 1-go-ASP
I am going to Phoenix to see my father's mother because she is sick.

The aim of the following analysis is to derive as many of these crosslinguistic properties of SR as possible by independently motivated principles about the nature of syntactic operations like Merge and Agree.

3. Analysis

3.1. SR, control, and movement

An observation made by Yosuke (2007) and Watanabe (1996) is that SR bears resemblance to obligatory control. Their analysis is based on control structures in Japanese. There are two allomorphs of the complementizer in such constructions: *(y)ooto* and *yooni*.[2] The first indicates subject control and the latter object control.

(11) *Obligatory control in Japanese (Yosuke, 2007, 2)*:

a. Taroo-ga [$_{CP}$ jibun-no ie-ni kaewr(u) ooto/*yooni]
Taro-NOM self-GEN house-LOC return C
kokotomi-ta
attempt-PST
Taro attempted to return to his house.

b. Hanako-ga Taroo-ni [$_{CP}$ jibun-no ie-ni kaer(u)
Hanako-NOM Taro-DAT self-GEN house-LOC return
*ooto/yooni] settokusi-ta
C persuade-PST
Hanako persuaded Taro to return to his house.

The descriptive generalization they draw from these data is that if the controlled clause is headed by *yooto* its subject must be coreferent to the subject of the controlling clause. Whenever it is headed by *yooni*, the subjects must be disjoint. The complementizer in these structures thus functions as an SR marker. One might not

[2]The initial /y/ of *yooto* is deleted after consonant-final stems.

find the analysis of *yooni* as a DS marker convincing because it encodes more than the fact that the subjects of the two clauses have disjoint reference. In addition, it indicates that the object of the control clause has the same referent as the subject in the controlled clause. In this sense it is a kind of *same object* marker. Given the crosslinguistic observation of the last section that SR systems in which the SS marker indicates referential identity between an object and a subject are very rare, the Japanese complementizer system does not seem to be a textbook example for an SR system. The basic insight, however, that SR and control are closely connected is worth pursuing because there are indeed similarities between the two constructions. Recall the properties of SS discussed in the last section. The verb in an SS context usually does not bear any agreement morphemes, its subject cannot be overtly realized and its tense depends on the tense of the matrix clause. These properties are well-known from obligatory control in English:

(12) John tried to leave.

The verb in a control clause is infinite, i.e. it does not bear any agreement or tense/aspect exponents. The subject cannot be repeated in the infinite clause and tense is dependent on the matrix clause. Furthermore, SR shares the properties of obligatory control that lead Hornstein (2001, 31, 32) and Boeckx et al. (2010) to a movement analysis of control: The controlled subject (PRO) requires a *local antecedent* which must *c-command* this PRO. The same holds for SR: In an SS context, the silent subject in the marking clause needs a *local antecedent* (compare property 7 in section 2) in order to get its reference fixed. This antecedent is in a *c-commanding* position[3] and whether SS or DS marking occurs is fixed relative to the closest structurally higher clause. Because of these similarities, I analyse SR as i) an instance of control and - following Hornstein's (2001) and Boeck et al.'s (2009) analysis for control - ii) as movement (see Hornstein (2007) for a brief sketch that SR might be analysed along these lines).

There are a number of analyses for obligatory control especially for English. The traditional approach (Chomsky, 1981) merges a PRO element in the subject position (Specv) of the controlled clause which is bound by a DP in the matrix clause (where binding involves c-command, a shared index, and government). In the same line, Finer (1985) develops an analysis of SR as binding. He assumes that the SS and DS marker are subject to the Binding Principles A and B, respectively, and that binding is possible from Ā-positions. The SR marker is the daughter of Comp

[3]That the antecedent c-commands the subject position is only true for control in subordination and for subordinated marking clauses. The derivations of coordination and adjunction are introduced in section 3.2.

in the marking clause. It shares its index with the DP in SpecT of the same clause. The Comp of the reference clause bears the index of its subject in Spec T, too. The matrix Comp is the governor of the embedded SR-Comp. When there is an SS marker in the lower Comp, it is subject to principle A and needs to be governed by the matrix Comp with the same index. This situation is prohibited for the DS marker since it falls under Principle B and must be free in its governing category, hence the matrix Comp cannot have the same index as the SR-Comp. Since the each of the Comps is coindexed with its respective subject DP, it follows indirectly that in an SS context reference and marking clause have a coreferent subject, whereas this is excluded in DS contexts. Watanabe (2000) and Yosuke (2007) transfer Finers core idea to the Agree framework of Chomsky (2001); Déchaine and Wiltschko (2002) develop a similar binding account in which DS marker are R-expressions that cannot be bound and SS markers are variables that must be bound (see also Pittman (2005) for an extension of their proposal).
All of these approaches have in common that they compare referential indices of two subjects (passed on to C). As Stefan Keine (p.c., discussion during the seminar) notes, there is a potential problem in that quantified items and interrogatives can be involved in the SR system, i.e. be the items in the reference and/or marking clause whose reference is compared, as in the example from Pitjantjatjara (Bowe, 1990, 93) in (13). But these elements are non-referential and therefore cannot bear a referential index.

(13) Minyma tjuta-ngku punu atu-ra nyina-nyi
woman many-ERG wood chop-ANT(MERG) sit-PRES
Many woman would be sitting around making wooden artefacts.[4]

Because of this fact, I want to pursue an approach that dispenses with indices. I adopt the movement analysis of control by Hornstein (2001) and Boeckx et al. (2010) because of the similarities between control and SR, and because no referential indices are needed in this approach. To see why indices are not needed, let me present the basic idea of the movement theory of control (Hornstein (2001, 2003); Nunes (2001); Boeckx et al. (2010)): A DP is base-merged in the embedded clause and then moved to a θ-position in the matrix clause. As lower copies are usually not phonetically realized, the DP is not overt in the controlled clause.[5] The

[4] *-ra*, glossed as ANT(MERG), is an SS marker.

[5] Another option for deriving coreference without indices and a single DP is to allow parallel merge which results in multidominance, as proposed in Citko (2005, 2006) for ATB-movement. The potential problems for this approach are twofold: The first is that the multidominated DP has to be moved to a c-commanding position in order to allow for linearization (for discussion see Citko, 2005). Under the assumption that movement has to be triggered by a feature, this can only be done by stipulating a universal EPP feature on a head that c-commands v, e.g. T, but it may be difficult to find independent

referential identity of the DP in the controlling and the controlled clause follows automatically without the need of comparing indices; it is the *same* element which is part of both clauses. I claim that this also happens in SS contexts: there are not two DPs whose reference is somehow compared; rather, a DP is base-merged in the marking clause and then moved to the reference clause, resulting in referential identity because it is literally the *same* element in both clauses.

3.2. Assumptions and derivations

The architecture of the system largely follows the one developed by Hornstein (2001); Boeckx et al. (2010). Syntactic structure is built up strictly cyclically in a bottom-up fashion. All basic operations (Merge, Move, Agree) are feature-driven. Movement can in principle apply from θ- to θ-position[6] if not blocked by independent principles about structure building and feature checking. Particularly relevant for what follows are the preconditions for Agree and Move. In recent Minimalism (Chomsky, 2000, 2001) movement no longer feeds Agree, but rather movement is seen as a consequence of Agree or, put differently, Agree it is a prerequisite for movement; viz. movement is Agree plus a structure building/subcategorization feature [•F•] which triggers (internal) Merge (the notation is taken from Sternefeld, 2006; Heck and Müller, 2007). Agree itself can only apply under certain conditions as given in the definition of Agree in (14) (based on Chomsky (2000, 2001); Richards (2008)):

(14) AGREE between a probe P and a goal G obtains if
- a. P c-commands G
- b. G is active (has an unvalued case feature)
- c. P and G have a matching feature F
- d. G is interpretable/valued for F ... with the result that ...
- e. P values and deletes uF on G; G values and deletes uF on P

---

evidence for such a movement in every SR language. The second difficulty consists in the fact there are no restrictions on which elements in which positions can be multidominated. Nothing prevents the system from generating a tree with two subtrees in which a multidominated DP is the object (the sister of V) in both subtrees. This is exactly what Citko (2005) does in order to derive ATB sentences with an object wh-question. But a generalization about SR is that it refers to syntactic subjects (sister of v′) and not to objects (cf. my discussion in 3.4). Keine (this volume) develops another approach without indices and a single DP in SS contexts.

[6]This implies that a single DP can bear more than one θ-role. This idea goes back at least to Bošković (1994) who tries to dispense with the Theta-Criterion and to derive its effects by independent principles.

The most important condition is the *Activity Condition* (cf. Chomsky, 2001) in (14-b) which states that the goal must be 'visible' for the probe by having an unvalued case feature. In the present context, this means that a DP which is case marked cannot enter into an Agree relation and as Agree is a prerequisite for movement it cannot be moved. These conditions will derive distributional properties of those elements which take part in the reference-tracking system.

Under these assumptions, the derivation of the obligatorty control sentence in (15-a) runs as in (15-b) (see Hornstein, 2001, 27). *John* is base generated in SpecV of the embedded clause,[7] it is then moved to SpecT of the same clause to check the EPP feature. Afterwards, it moves to SpecV of the matrix clause, triggered by the subcategorization feature [•D•] of the transitive matrix V, followed by movement to SpecT of the matrix clause.[8] The moved DP *John* gets its case valued by matrix T and it bears the agent θ-roles of both *win* and *hope*.

(15) *Obligatory control in English*:

a. John hopes to win the race.

b. John [John [hopes [John to [John win the race]]]]

Movement of *John* from the embedded SpecT position to SpecV of the matrix clause is possible because the DP is still active, i.e. it is not case marked by the embedded T head which is *defective* in infinite complementation: it neither agrees with the subject of the controlled verb nor can it assign case. This codependency of the possibility to assign a case value and to induce agreement has been noted by many researchers (cf. among others Schütze, 1997) and is built in Chomsky's (2001) definition of Agree, where case valuation on a goal is the result of ϕ-agreement with a probe.

I propose that the derivation of an SR sentence with a marking clause showing SS morphology proceeds in parallel (apart from the obligatory EPP in English): A DP is first merged as the subject of the marking clause in Specv and is then moved on to a second θ-position – Specv of the reference clause. The SS marker tracks that this kind of θ-movement has taken place, it is thus a reflex of movement (as we know them from successive-cyclic movement). DS marking occurs when there

[7]Hornstein (2001) assumes that the subject is merged VP-internally.

[8]If movement is parasitic on Agree, there must be an Agree relation involved in subcategorization/c-selection, at least if the subcategorization feature is checked by internal Merge. I assume that Agree checks whether the categorial feature of the goal DP and the categorial feature of the subcategorizing element v (V in Hornstein's work) match. (Internal) Merge is then triggered by a structure building feature [•F•]. v thus has a probe feature [∗D∗] and [•F•]. For convenience, I will use the abbreviation [•D•] on v, but it actually means that there are two features: a categorial probe feature and an EPP feature which triggers movement after Agree has taken place.

are in fact two different DPs in the subject positions of the two clauses, one in the marking clause and another one in the reference clause without having moved the former to a θ-position in the reference clause. In accordance with what has been outlined above, movement of a DP from the marking to the reference clause is only possible if the moving DP has not been case marked before. Hence, the embedded T must also be defective, viz. unable to assign case to the subject DP, which also means – given the tight connection between agreement and case assignment in Agree relations – that it is unable to agree in phi-features with the DP. This fits nicely with what has been observed for SR languages in the previous section: In SS contexts, the verb of the marking clause does not agree with its subject, although it does in reference clauses and DS marked clauses.

Before going through the derivation of the crosslinguistic properties of SR systems, the role of the head C in the embedded clause needs to be addressed. Assume we are dealing with SR in subordination. When movement crosses clause boundaries (as would be the case in SS contexts by moving a DP from the marking to the reference clause), the standard assumption is that it generally applies successive-cyclically through SpecC of the subordinated clause to the intermediate landing site SpecC. The same must then hold for movement to θ-positions. But the step from the intermediate SpecC to Specv in the matrix clause is an instance of improper movement. For SR I suggest that there is no C head in the subordinate SS marking clause and therefore the problem does not arise (the same conclusion for English obligatory control infinitives is defended in Bowers, 2002).[9] Independent evidence for this assumption comes from the fact that SS marking clauses cannot bear their own mood features (see the previous section) which are usually situated in C. Rather, the mood in the marking clause is understood to be equivalent to the mood in the reference clause.[10] Furthermore, the English translation of the examples from SR languages often include complementizers like *while*, *after*, ... that

[9]In this assumption I deviate from Boeckx et al. (2010) who need to assume that embedded control infinitives are CPs, see especially their chapter 5. But even if it turns out that there is a C layer in SR marking clauses and that successive-cyclic movement through the embedded SpecC is necessary, it does not falsify the general proposal for SR advocated here: Whatever rescues this kind of improper movement in control sentences applies to marking clauses as well. See Hornstein (2001, ch. 3), Salzmann (2005), and Richards (2009) for discussion of whether improper movement really has to be banned from grammar or how its effects are circumvented here.

[10]For an appraoch that builds on the tense/mood dependency of the marking clause from the reference clause see Assmann (this volume).

render the semantic relation of the two clauses transparent for the reader, but often these do not show up in the original language data.[11]

(16) a. Utavalu-man chaya-shpa ñuka mama-ta rilu-rka-ni
Otavalo-to arrive-SS my mother-ACC see-PST-1
When I arrived in Otavalo, I saw my mother.
Imbabura Quechua, Cole (1983, 5)

b. nee ne-nua-ka paapaa ne pii-ʔɨiti
I 1SG-arrive-SS tortilla 1SG 3SG-give
When I arrived, I gave him a tortilla.
Huichol, Comrie (1983, 19)

c. tokatoka-č savakyuva u-t-k čikwar-kiñ
Tokatoka-SUBJ Savakyuva see-TEMPORAL-SS laugh-COMPL
When Tokatoka$_i$ looked at Savakyuva, he$_i$ laughed.
Yavapai, Finer (1985, 37)

Another supporting fact is noted by Camacho (2010c) based on data in Black (1992). In Shipibo, main clauses can include second position clitics (evidentiality markers, interrogative markers, imperative morpheme, see the examples in (17)). They have to have exactly one XP to their left, regardless which role or grammatical function it bears. Black analyses these clitics as C-heads. Interestingly, these markers are not available in SR marking clauses. I take this as evidence for the absence of the C head.

(17) *Clitics in Shipibo main clauses (Camacho, 2010c, 247)*:

a. E-n-ra binon be-ke
1SG-ERG-DIR.EVID aguaje bring-PERF
I brought aguajes (a fruit).

b. Tsoa-rin mi-pekao?
who-Q.COP 2.behind
Who is behind you?

To summarize this discussion, I assume that there is no C head in clauses with a defective T, but C is present if T is non-defective. This can be implemented by a selectional restriction on C: C only selects for non-defective Ts.[12]

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[11] Often, these relations are expressed by word order (e.g. in Shipibo Camacho (2010c)) or the order of the involved clauses (e.g. in Maricopa Gordon (1983)).

[12] This view is compatible with *feature inheritance* as introduced in Chomsky (2007): He proposes that T does not bear uninterpretable phi-features and a case feature on its own, rather it inherits these features from C. Hence, defective Ts lack C heads, but non-defective Ts are c-commanded by C heads.

Finally, let me stress again that I assume, following Bowers (2008), that movement (internal Merge) to θ-positions is triggered by structure building/subcategorization features, just as any other internal or external Merge operation. In this aspect I depart from Hornstein's assumption that movement is greedy, or as he puts it *enlightened self interest* that applies in order to check its θ-role which is a feature of the verb (Hornstein, 2001, 37).

In the remainder of this section, I go through the derivations of SR in subordination, coordination, and adjunction. Maricopa exhibits SR marking in all three constructions (Gordon, 1983, 87, 88):

(18) *Subordination*:

a. m-iima-m ʔ-mhan-k
2-dance-DS 1-like-ASP
I like you dancing/you to dance

b. ʔ-iima-k (mat) ʔ-yuu-ksh
1-dance-SS REF 1-see-1PERF
I saw myself dance.

(19) *Coordination*:

a. nyaa ʔ-ashvar-k iima-k
I 1-sing-SS 1-dance-ASP
I sang and danced.

b. Bonnie-sh ashvar-m ʔ-iima-k
Bonnie-SUBJ sing-DS 1-dance-ASP
Bonnie sang and I danced.

(20) *Adjunction*:

a. ʔiipash-sh paly-k aashuuham-k
men-SUBJ many-SS hit.PL-ASP
Many men hit him.

b. hat ʔ-ii-m anoq-m aaham-m
dog wood-ASC small-DS hit-ASP
She hit the dog with a small stick.

I start with subordination and I illustrate the derivation with a transitive verb in both the subordinate marking clause and the matrix clause. There are two parameters in SR languages:

(21) *Parameters*:

a. Category of the marking clause:

-a CP (whose head selects a non-defective TP) or

-a bare TP with a defective head T_{def}

b. Number of DPs in the numeration:

-There are fewer DPs than c-selection features on heads (hence, θ-movement must apply in order to check all c-selection features)

-There are as many DPs as there are c-selection features on heads (hence, no θ-movement is necessary)

When these parameters are cross-classified, 4 possible derivations arise, but only the following two will converge:

(22) *Embedded TP (defective T), fewer DPs:*

a. [$_{CP}$ C [$_{TP}$ T(Case:G) [$_{vP}$ DP_{ext1}(Case:G) [$_{v'}$ v([•~~D~~•] [$_{VP}$ V [$_{TP}$ T_{def} [$_{vP}$ <DP_{ext1}([CASE:□]>) [$_{v'}$ v([•~~D~~•], Case:F) [$_{VP}$V DP_{int}(Case: F)]]]]]]]]]

b. Numeration at the stage when matrix v is has been merged: Num [T, C] – no DP left for external Merge in $Specv_{matrix}$

(23) *Embedded CP (non-defective T), enough DPs*:[13]

a. [$_{CP}$ C [$_{TP}$ T(Case:G) [$_{vP}$ DP_{ext2}(Case:G) [$_{v'}$ v([•~~D~~•] [$_{VP}$ V [$_{CP}$ C [$_{TP}$ T (Case:G) [$_{vP}$ DP_{ext1}(Case:G) [$_{v'}$ v([•~~D~~•], Case:F) [$_{VP}$ V DP_{int}(Case: F)]]]]]]]]]]

b. Numeration at the stage when matrix v is has been merged: Num [DP, T, C] – still a DP available for merging in $Specv_{matrix}$

All DPs enter the derivation with an unvalued case feature [∗Case:□∗] that is valued as a consequence of Agree with either v or T. In (22), vP of the embedded clause is generated. DP_{int} agrees with v and gets its case feature valued. DP_{ext} still has an unvalued case feature. Then T_{def} is merged which is a potential case assigner, but as it is defective, it does not have probe features that can initiate an Agree-relation with DP_{ext} and as case valuation is a reflex of Agree, the case feature of DP_{ext} remains unvalued. Matrix V merges with the complement TP and matrix v merges with this VP. As the matrix clause is transitive, too, v has a c-selection

[13]For the derivation it is not important whether there is a C head in an embedded DS clause or not. The crucial point is that T is not defective. I include it here for completeness. See Chomsky (2007)'s discussion of feature inheritance for a similar consequence: defective Ts lack C heads, but non-defective Ts are c-commanded by C heads.

feature [•D•]. When there is no DP left in the numeration (as assumed for (22)), the only option is to move a DP from the c-command domain. This is DP_{ext} of the embedded clause (movement indicated by < >) because it is the only active DP; the internal argument of the embedded clause is already case marked and thus inactive. The external argument of the embedded clause moves to check [•D•] of matrix v and it receives a second θ-role. Its yet unvalued case feature is valued by the matrix T head with which it agrees. Note that the matrix T head cannot be defective because otherwise the highest argument of a transitive verb could never receive a case value and the derivation would always crash. The derivation in (22) results in SS marking. The morphological realization is discussed in section 3.3.
Imagine that the derivation proceeds in the same way up to the point when matrix v is merged with VP, but then there is still another DP in the numeration that can be merged to satisfy [•D•] of v (=3rd option: embedded TP, enough DPs in the numeration). If this DP is indeed merged by external Merge, it agrees with matrix T and receives a case value. However, this derivation crashes because DP_{ext} of the embedded clause has still an unvalued case feature (Case Filter violation).[14]
In (23) the embedded vP is generated. DP_{int} agrees with v and receives its case value. vP is merged with T. As T is not defective, it can Agree with DP_{ext} and value its case feature. As a result, both DPs in the embedded clause have a case value and are thus inactive. Matrix V merges with CP and matrix v with VP. v has a c-selection feature [•D•]. There is still a DP in the numeration which checks this feature and Agrees with matrix T, thereby getting its case feature valued. All DPs have a case value, the derivation converges. This derivation will result in DS marking.
Assume there is no DP left in the numeration to satisfy [•D•] of matrix v (=4th option: embedded CP (non-defective T), fewer DPs). The only way to check it would be to move a DP from the c-command domain. However, both DPs in the embedded clause are inactive and thus not movable (even if they were moved, the derivation would crash because matrix T cannot assign its case value to the moved and already case marked DP).[15]

If the analysis of SR developed for subordination is to be transferred to coordination and adjunction, two problems arise: In an SS configuration with a single DP_{ext} for both clauses, this DP would have to move from one conjunct to the other

[14]The standard background assumption is that matrix v usually cannot assign accusative case to elements in infinite complements, this is only possible in ECM infinitives.

[15]One might think of merging an expletive as a repair strategy - be it in the numeration or be it inserted as a last resort, violating Inclusiveness - it would not help, because expletives cannot bear θ-roles and Specv is a θ-position.

or from an adjunct to the matrix clause. If this were the case then (i) the landing site of the DP would not c-command its base position and (ii) movement would have to take place from an island.[16] Adjuncts are non-complements and as such they are islands by the CED; movement from a conjunct is restricted by the Coordinate Structure Constraint:

(24) a. *Condition on Extraction Domains (cf. Huang, 1982)*:
Movement must not cross a barrier. An XP is a barrier if it is not a complement.

b. *Coordinate Structure Constraint (Ross, 1967)*:
In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.

If it turns out that SR is indeed not attested in coordination but is rather a different phenomenon (cf. Weisser (this volume)), this would nicely fit in with the movement approach because this approach predicts that movement from within a conjunct is barred. However, since this issue is not settled and since the same problems remain for adjunction, which also involves movement out of islands, I will show how SR in coordination and adjuncts can be accommodated to the present movement analysis.

Nunes (2001) addresses the aforementioned problems (movement out of islands, landing in a non-commanding position) for the movement theory of obligatory control. His solution is to assume sideward movement: An element in a subtree α can be merged to another subtree β. Movement still extents β at the root, but it does not land in a c-commanding position.

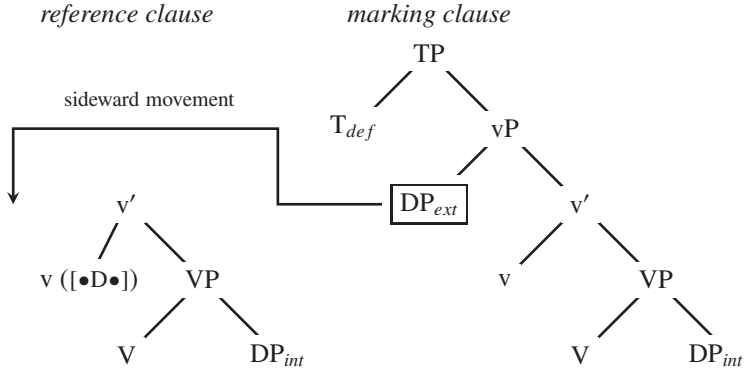
(25) John saw Mary before <John> leaving the room. *(Hornstein, 2001, 36)*

How can sideward movement leave an island? Nunes (2001) claims that XPs are islands as soon as they are merged to another subtree, such that an adjunct XP is an island when it is adjoined to the matrix clause, but not when the subtrees are independent of one another. Returning to the example in (25), movement of DP_{ext} *John* from the adjunct takes place *before* the adjunct is attached to the main clause. The adjunct is adjoined to matrix vP, but *John* is merged in matrix Specv. Hence, merge of *John* precedes adjunction. I follow Nunes and adopt sideward movement both for movement from adjuncts and conjunctions.

[16]If movement from a DP in an adjunct to Specv of the matrix clause is to a non c-commanding position depends of course from the actual adjunction site. I assume that adjuncts are adjoined to vP and hence the problem is real.

Turning now to the derivation of SR in adjuncts, the derivations proceed as with subordination, the only difference is that movement is sidewards. An adjunct can have a defective or a non-defective T head. If it is defective, DP_{ext} in the adjunct cannot receive a case value from T. If there is no DP that can satisfy the c-selection feature of matrix v, DP_{ext} from the adjunct moves sidewards and checks [•D•] in the matrix clause. Sideward movement is possible because v in the second clause has a c-selection feature [•D•]. The sideward-moved DP gets its case value from matrix T (which cannot be defective in a transitive clause as this would always lead to the crash of the derivation: The case features on matrix DP_{ext} would remain unvalued). If there were still a DP in the numeration that was merged to matrix v and that agrees with matrix T, DP_{ext} in the adjunct would keep its unvalued case feature and the derivation would crash. Assuming that the matrix clause contains a transitive verb, another option arises which was absent in subordination: The internal argument of the matrix clause could move to check [•D•] of matrix v, because the internal argument of the reference clause and the external argument of the marking clause do not stand in a c-command relation and hence, none intervenes for the other such that locality does not prohibit this step. This is, however, not an option because DP_{int} is already inactive, being case marked by matrix v.
If T in the adjunct is non-defective, it can Agree with DP_{ext} in the adjunct and value its case feature. There must then be a DP left in the numeration for merging in matrix Specv, checking [•D•]. Sidewards movement of DP_{ext} in the adjunct clause is impossible because it is inactive.

(26) a. *Sideward movement in SS configuration*:



b. *Adjunction of the marking clause to the reference clause*:
[$_{CP}$ C [$_{TP}$ T [$_{\mathbf{vP}}$ **vP** [**TP**]]]]

The derivation of a conjunction proceeds in exactly the same way, except for the fact that sideward movement applies from one conjunct to the other. This is pos-

sible because movement to Specv takes place before the conjuncts are conjoined and therefore the marking conjunct is not (yet) an island. For the moment I assume that the categories that are conjoined are TPs. There is a head Conj which takes the marking TP as its complement and the reference clause as its specifier. ConjP is selected by C. It follows from this structure that the conjuncts share the same mood features. The same restrictions on movement that have been discussed for adjunction apply here, too.

(27) $[_{CP}$ C $[_{ConjP}$ TP $[_{Conj'}$ Conj TP]]]

Up to now, only those derivations in which both clauses are transitive have been addressed (option a. in (28)), but there are other possible combinations:

(28) *Combinations of reference and marking clause*:

	Reference clause	Marking clause
a.	transitive	transitive
b.	transitive	intransitive
c.	intransitive	intransitive
d.	intransitive	transitive
e.	intransitive	ditransitive
f.	transitive	ditransitive
g.	ditransitive	intransitive
h.	ditransitive	transitive

Regardless of transitivity, in the marking clause only the structurally highest argument can be extracted (provided that T is defective, of course): In transitive clauses this is the external argument, because the internal argument is case marked by transitive v and thus inactive. In ditransitive clause it is also the highest argument in Specv if the goal argument is introduced by a functional head Appl which also case marks the goal (Pylkkänen, 2000). In intransitive clauses this is the sole argument. With respect to unaccusative verbs v cannot assign case (Burzio's generalization); this is also assumed to hold for unergative verbs such that the sole argument of an intransitive verb can only be case marked by T. If T is defective, the sole argument can be moved. This derives the empirical observation that only subjects of the marking clause (i.e. the structurally highest DPs) are involved in the SR system.

With respect to the reference clause, the situation is more complex if more than one landing site for the moving DP is provided. If the reference clause is intransitive (be it unaccusative or unergative), there is only one possible landing site and the element in this position will inevitably be the subject of the clause (the structurally highest argument). This also derives that the subject of an intransitive verb

of the reference clause is involved in SR marking. If, however, the reference clause is transitive, there are several possible landing sites for a moving DP. First, in adjunction and coordinate structures, the internal argument of the reference clause itself could be moved to Specv of the same clause. As already discussed above, this is excluded by the Activity Condition in (14-b). This only leaves moving the structurally highest DP from the marking clause (given that T in the marking clause is defective, as assumed in this discussion). This DP can land in the complement of V in the reference clause or the specifier of v of the reference clause. None of these options is excluded by the constraints adopted so far. If it is moved to CompV it gets its case value by v and another DP is then merged (external Merge) in Specv. If it is moved to Specv after another DP is merged (by external Merge) in CompV, it agrees with matrix T and gets its case feature valued. Remember that the empirical observation is that SR is marked by reference not only to the subject of the marking clause, but also to the subject of the reference clause. However, the present analysis does not rule out that the object of the reference clause is involved. First of all, there are indeed languages in which this is possible, but only very few, see the following example from Warlpiri, pointed out to me by Philipp Weisser, in which the SR marker -*kurra* indicates that the subject of the marking clause is coreferent with the object of the reference clause. If both subjects were coreferent, the marker would be -*karra*.[17]

(29) ngajulu-rlu rna yankirri pantu-rnu, ngapa nga-rninja-kurra
I-erg aux emu-abs spear-past water-abs drink-inf-S/A=O
I speared the emu while it was drinking water. (Austin, 1981, 325)

However, the vast majority of SR languages does not allow for objects to participate in the SR system and it would be nice to account for this restriction. An option to derive this fact is to assume that the *Merge-over-Move Constraint* (Frampton and Gutman, 1999; Chomsky, 2001) holds in languages that only allow subjects in the reference clause to be relevant for SR. Here is why: Considering adjunction and coordination, if there is still a DP in the numeration when the reference clause is generated, it has to be merged in CompV before movement of a DP from the marking clause is possible and hence, the landing site of the DP moved from an adjunct/conjunct can only be Specv. SR languages that allow CompV to be a landing site do not have this preference for Merge over Move. In OT terms this difference would amount to the reranking of constraints which demand each of the

[17] Another example from Kiowa with an indirect object that takes part in the SR system is provided in (37-b). Note that the present analysis allows for the object of the reference clause to be involved in the SR system, but not the object of the marking clause due the Activity Condition. This seems to born out even in those languages that show SR with objects – they are only found in the reference clause.

two operations to apply as soon as possible (Prince and Smolensky, 1993, 2004): Merge ≫ Move in one class of SR languages, and Merge ∘ Move (the latter representing a tie between the two constraints encoding that they are not ranked with respect to each other) in the other class of SR languages.
Another case that needs elaboration is one in which the reference clause is ditransitive. For SR in subordination, there are two specifiers that qualify as possible landing sites for a DP from the marking clause: the position to which the agent role is assigned (Specv) and the one to which the goal role is assigned (SpecAppl). Again, if a language has the ranking Merge ≫ Move, the only landing site is Specv. If a language has Merge ∘ Move both positions are possible landing sites. Evidence that indirect objects can be the basis for SR is provided in section 3.4 from Kiowa, cf. (37-b). For movement from adjuncts/conjuncts into a ditransitive reference clause, three options obtain: landing in CompV, SpecAppl or Specv. Depending on the reranking of the constraints only Specv or all of these positions are possible landing sites. The former seems to be the case in the vast majority of SR languages: SR tracks the reference-identity of *subjects* (i.e. of an agent, the structurally highest argument in a clause). In the present account, this is derived by the Merge-over-Move constraint.

3.3. Morphological realization

In this subsection I turn to the question what the SR marker actually expresses. What distinguishes an SS from a DS marking clause in the analysis proposed here is whether there is still a DP in Specv of the marking clause (I return to unaccusatives in section 4). If it is not, it has been moved to the reference clause and SS marking should occur. This means that the SS marker is analysed a reflex of movement as we know it from successive-cyclic movement. If the DP is still present in the marking clause, another DP has been merged in the reference clause and DS marking should show up. Assuming a postsyntactic morphological component which realizes syntactic features (Halle and Marantz, 1993, 1994; Harley and Noyer, 1999), I propose that the SR marker realizes the head T in an abstract structural scenario (see Bobaljik (2007) for vocabulary items whose insertion depends on the syntactic context of the realized head), namely a head T

a. which is c-commanded by a head α that is *not* the root node and that is the closest c-commander for T and
b. in whose accessible domain there is a DP.

If there is such a DP, the DS marker shows up, if there is no such DP, the SS marker occurs.

(30) *Vocabulary items*:

a. /X/ ↔ T / [$\alpha_{[-root]}$[__ . . . DP] *DS marker*

b. /Y/ ↔ T / [$\alpha_{[-root]}$[__]] *SS marker*

The first part of the definition is that the closest c-commanding head for T has to be a non-root head. It is necessary to include this condition, because otherwise an SR marker in subordinate structures could occur in matrix clause, too, but this is excluded. It does not fall out from the system and has to be stipulated here. A head α is the closest c-commanding head for T if there is no other head β which also c-commands T and is c-commanded by α. That means that the relevant heads α are non-root C which selects a non-defective TP, matrix V which embeds a defective TP, the Conj head in coordinations and the matrix T head in adjunction contexts.[18] T heads in matrix clauses cannot be realized by the SR markers because they are embedded by a C head which is the root node, viz. $C_{[+root]}$. Consider the structure of adjunction and conjunction in (26-b) and (27). As for coordination, the closest c-commanding head of the lower TP is Conj, which is not a root node. The closest c-commanding head of the higher TP in SpecConj is C, a root node. Hence, SR marking shows up only once. The same holds for adjunction: Matrix T is embedded under the root C, but the T head of the adjoined clause is c-commanded by matrix T, which is not a root node, hence, SR marking is only possible in the adjoined clause.

The second condition which guides the insertion of the SR markers is whether there is an accessible DP for T (given that T is c-commanded by a non-root head which is the closest possible c-commander). The notion of accessibility needs to be clarified. The relevant distinction is whether there is a DP in Specv thus, Specv must be accessible for T as defined in (31).[19]

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[18]Pittman (2005, 7) also assumes that the SS marker is the realization of a defective T head which does not possess a ϕ-probe.

[19]The stipulated notion of accessible domain in (31) can be made follow from more general principles about what parts of the structure are visible for a given head. One possibility is to include the strict version of the PIC (Chomsky, 2001) here, presupposed that it is valid in the morphological component, too (see e.g. Dobler and Skinner (2009) for arguments that the notion of phase plays a role also after the syntactic computation in morphology and phonology).

(i) *Phase Impenetrability Condition*:

a. In a phase α with the head H, the domain of H is not accessible to operations outside α, only H and its edge are accessible to such operations.

b. The domain is the complement of a phase head, the edge is its specifier.

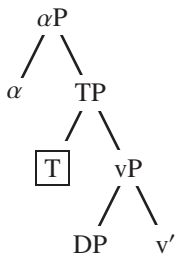
c. v and C are phase heads.

(31) The accessible domain of T is the edge domain of the head v, which is selected by T. The edge includes the specifier(s) of v, but not its complement.

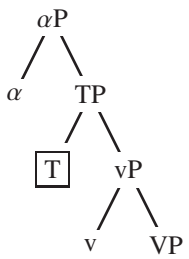
The DS marker in (30) is more specific than the SS marker, because its context restriction includes everything the SS marker's context requires and in addition it requires a DP in its c-command domain. Therefore, the DS marker has priority when it comes to insertion (cf. the *Subset Principle* and *Specificity* in Halle and Marantz, 1993, 1994). The SS marker thus qualifies as an elsewhere marker in marking clauses.

(32) *Realized T*:

a. DS:



b. SS:



A further remark is in order. The two SR markers differ with respect to the fact whether there is a DP in Specv of the marking clause or not. SS is inserted when this is not the case. However, it is not an evident assumption that the two scenarios are distinguishable in the morphological component. Under the assumption that movement involves copying of an item, there is no gap in Specv of the marking clause when a DP is moved to the reference clause. There is a lower copy and this would predict DS marking throughout, which is empirically inadequate. There are two solutions. In what follows I assume that movement does not leave behind anything, neither a trace nor a copy, it just leaves a gap (see also Epstein et al., 1998; Müller, 1998). Under the copy theory of movement additional assumptions are necessary that allow for a distinction between lower copies and copies in the

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As a consequence, only Specv is accessible for T, but T cannot see V's complement which is in v's domain. Hence, the only thing that counts for the computation of which VI is inserted, is whether there is a DP in Specv. This has consequences for an unaccusative verb in the reference clause, whose sinlge argument is VP-internal, because it is predicted that the internal DP is not in T's accessible domain and hence DS marking whould be impossible. Indeed, we often find 'unexpected' SS marking with unaccusative verbs in the marking clause. See section 4 for discussion.

final landing site. For example, any member that is not the highest member of the movement chain has to receive a special flag that renders is invisible for the morphological component.

Independent evidence for the claim that SR markers are realizations of T is provided by data from e.g. Ancash Quechua, Mojave, and Maricopa. In Ancash Quechua, SR marking occurs exclusively in adjunct clauses. In DS contexts, the verb cross-references the person of the subject and bears the suffix *-pti*. In SS contexts, the verb does not show subject agreement and there are two SS suffixes, *-r* and *-shpa*. It is remarkable that the marker *-r* is also used as a suffix of embedded infinitives (Cole, 1983, 14):

(33) papaa-ni qalla-rqu-n maqa-ma-**r**
father-my begin-REC.PST-3 hit-1.OBJ-INF
My father began to hit me.

As was noted in section 2 and 3, SS marked clauses and infinitives (like English clauses with obligatory control) have a lot of properties in common: they do not have an overt subject and they do not agree with their logical subject. This was included in the present analysis by assuming that the T head that mediates subject-verb-agreement is defective (which is a necessary precondition in SS contexts for movement of DP_{ext} from the marking to the reference clause). An SS marker realizes a defective T and defective Ts are standardly assumed to occur in infinitives. In Ancash Quechua the syncretic morphology shows that SS clauses and infinitives involve the same structure, at least the same defective head T.
Furthermore, the fact that SR markers and markers which encode other features of T are in complementary distribution in some languages supports the claim that SR markers realize T. In Maricopa the SS marker *-k* and the DS marker *-m* are identical to the aspect markers *-k* and *-m* which both express neutral irrealis (choice of *-k* or *-m* is lexically determined), see the examples in (18) to (20). What is more, the SR markers are in complementary distribution with the aspect markers which shows that they compete for insertion into the same head. A marking verb that bears the aspect suffix *-m* cannot bear an SR marker in addition. That means that even if the two clauses have the same subject (which is usually indicated by the suffix *-k*) the verb bears only the aspect marker *-m*, adding *-k* or replacing *-k* for *-m* leads to ungrammaticality (Gordon, 1983, 86):

(34) ʔayuu ʔ-maa-m v-ʔ-yem-k
s.t. 1-eat-IRR DEM-1-go-ASP
I ate and then left.

Assuming that aspect (at least in Maricopa) is encoded in T, the distribution follows.

Finally, as was already noted in section 2 and some examples cited in this paper, DS markers are fused with subject agreement markers or are derived from these and show allomorphic variation, whereas SS markers are often zero or invariant morphemes. Subject agreement is standardly assumed to be a relation between T and the highest DP (i.e. the subject) in the vP. The morphological reflex of this agreement is a realization of the phi-features copied from the subject onto T via Agree. These interactions follow naturally when SR markers spell out T: In SS contexts, T is defective and cannot Agree with the subject, hence there are no overt reflexes of agreement on the verb and there are no phi-features on T which could condition allomorphy of the SS marker. In DS contexts, T agrees with the subject and the cooccurrence of subject-verb-agreement and the DS marker or allomorphic variation of the DS marker with respect to the phi-features of the subject is expected.

The proposal about what the SR marker expresses makes several predictions. As the vocabulary items are sensitive to the closest head that c-commands T, this heads must be accessible during realization and it is therefore expected that SR markers can express properties of this head, too, or that there is allomorphy of the markers with respect to features of this head. For example, a DS marker in a subordinate clause could express features of the C head that c-commands it, whereas an SS marker cannot, because - as was argued for in the previous subsection - there is no C head in embedded SS clauses. Evidence fot this prediction comes from the two Papuan languages Kewa and Amele. In Kewa, final verbs show person and number agreement with their subject. Medial SS verbs do not agree with their subjects, but medial DS verbs do. However, the agreement markers of medial DS verbs are not identical to those of final verbs. There is evidence that the former are derived from a subjunctive paradigm (Franklin, 1983, 40), hence, they express the category mood, too.

In Amele (Roberts, 1988, 48,49) medial verbs that are marked for SR also express sequentiality vs. simultaneity. Simultaneous medial DS verbs have a distinction for mood that SS verbs do not show, namely whether the verb is realis or irrealis. Thus, Amele exhibits allomorphy of the DS marker for properties of C.[20] Note that both SS and DS verbs agree with their subject in person and number.

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[20]There are also languages in which both the DS and the SS are sensitive to properties of C, e.g. Kiowa. This might indicate that the SR marker is a realization of the C head in this language. For the latter proposal see Keine (this volume). However, the alleged SR marker in Kiowa may not even be an SR marker (for arguments see Weisser (this volume)). If this is true, then the Kiowa data are not an exception.

(35) *Amele simultaneous SS and DS markers*:

a. SS: stem reduplication + set 1 agreement markers
b. DS irrealis: stem reduplication + set 2 agreement markers
c. DS realis: stem reduplication + set 3 agreement markers

In SS contexts, the marking clause TP is embedded under the matrix V. As such it should be possible to vary in its form according to properties of matrix V, like e.g. valency. This is indeed what can be found in Cashinahua (Montag, 2005). Among other categories like aspect, SR markers indicate whether the verb of the reference clause is transitive or intransitive.

(36) *Cashinahua SR morphemes*:

-kin	incomplete, SS, trans.	*-xun*	complete, SS, trans.
-i	incomplete, SS, intrans.	*-a*, *-abu*	complete, SS, intrans.
-ai, *-aibu*	incomplete, DS, trans.	*-a*, *-abu*	complete, DS, intrans.
-aya	incomplete, DS	*-ken*	complete, DS
-tan	completed series, SS	*-nun*	completed series, DS

Even more compelling is the statement made by Camacho (2010c, 255) about Shipibo which exhibits a similar transitivity sensitive SR marking system: "[. . .] no different-subject SR-morpheme tracks valency. This is true for several other Pano languages as well, possibly with the exception of Cashibo, according to Sparing-Chávez (1998:fn. 19). In addition, most same-subject SR-morphemes track valency. . . . Only same-subject morphemes track the adjacent verb's valency." This is exactly what the present analysis predicts: Only SS clauses have a defective T and lack the C projection with the consequence that matrix V embeds the marking TP. The SS marker needs to see V as its closest c-commander otherwise it could not be inserted. As such it can be sensitive to V's features. This is not possible in DS clauses which have a C projection and therefore the DS marker needs to take C as the closest c-commanding head into consideration, not matrix V.[21]

3.4. Advantages of the movement analysis

The movement analysis of SR has several advantages which I sum up in this section. First of all, the analysis can derive referential (non-)identity without any ref-

[21] This prediction is only valid for SR in subordination, because only then matrix V is the closest c-commander for the embedded T. In Shipibo, however, SR occurs only in adjuncts. But as the adjunct (the marking clause) is the sister of the reference clause's vP after adjunction, it is not surprising to vary for valency of the reference clause (assuming that allomorphy can be triggered by adjacent heads).

erential indices: When two clauses have the same subject, it is literally the *same* item that is moved from one clause to the other, being θ-marked in both. Remember that using indices poses a problem for quantified DPs in the SR system, as discussed in section 3.1.

Let us return to the properties of SR systems collected in section 2. If two or more clauses have the same subject, it can show up only in the reference clause but not in the marking clause(s). In the present analysis, this fact follows because I have assumed that movement leaves nothing behind, neither copies not traces. But if one prefers to assume that movement involves copying (see the discussion in section 3.3), the fact follows from the more general assumptions about spell-out under the copy theory of movement: Usually, only the copy in the final landing site is spelled out.

Furthermore, an observation in SR languages is that SS marking clauses show less morphological (verbal) markers than DS marking clauses do. e.g. the former often do not show agreement morphology and their mood and tense values are determined by those of the reference clause. This follows under the movement approach because T in the marking clause is assumed to be defective. This is not just a stipulated assumption, it even has to be defective in order to allow for movement of the subject DP to the reference clause: Only active DPs, viz. DPs without valued case, are capable of being a goal for Agree and afterwards a moving element. As valuation of case presupposes Agree in ϕ-features in recent developments of minimalist syntax, the absence of valued case means that there has also been no agreement. T can thus not have a ϕ-probe in SS clauses, in a sense, it is underspecified. If T is defective anyway, it can be underspecified for tense as well and takes over the tense of the T head in whose scope it is, namely T in the reference clause. I also assumed that there is no C head in marking clauses (see the argumentation in section 3.2). Again, mood is then determined by the reference clause C head.

Assuming an iconic relation between the cardinality of expressed features and phonological weight to hold, it is not surprising that SS markers are phonologically less complex (sometimes even null) and more invariant than DS markers. SS markers spell out a *defective* T that has less features than the non-defective T head in DS marking clauses and reference clauses and hence, they are less complex. This is also reflected in the specification of vocabulary items proposed in section 3.3: SS items are default realizations of T in non-root/embedded clauses, DS items are more specific.

Nevertheless, I have to mention that there are languages in which the verb in the marking SS clause can agree with its subject as well, see e.g. the data from Amele in (7), Huichol in (16-b) and Maricopa in (18) - (20).

These data do not fall out from the present account because in SS contexts the external argument cannot agree with T, but it seems to do so in the data at hand. For a possible solution of an identical problem in the movement theory of control

see the discussion of hyperraising and finite control in Boeckx et al. (2010). They suggest that T may be only partially defective (lack e.g. person), but valuation of the other phi-features is possible and hence, these fetaures can be realized morphologically. Case marking is, however, dependent on *complete* phi-featue valuation which is impossible with defective T. Movement of the external argument is thus still possible although (partial) Agree took place.
In addition, it was noted that only syntactic subjects, meaning the structurally highest arguments in clauses, can participate in the SR system (with very few exceptions). This observation has two parts in the current analysis:

a. Only syntactic subjects can be moved out of marking clauses, and
b. they can only land in the subject position of the reference clause.

The former follows from the Activity Condition: An internal argument of a transitive verb is case marked by v and thus inactive, whereas an external argument of a transitive v and the sole argument of an intransitive verb can remain inactive if T is defective. Hence, only the structurally highest argument in a marking clause can be moved. The second observation follows under the assumption that Merge preempts Move. A DP cannot land in object position when there is still a DP available in the numeration, hence only the specifier of v is a possible landing site.
The fact that SR is a relation between structurally adjacent clauses follows from standard locality conditions on movement. A different matter is the locality of the movement step from the marking to the reference clause. Remember that I made the assumption that there is no C head in an SS clause. If one wants to adopt the strong version of the PIC (Chomsky, 2000) as the currently widely adopted condition on (non-)accessible domains, and if v and C are phases, the present movement approach is local enough: The subject of the embedded clause is at the edge of the embedded vP and there is no phase between the base and the landing site of the DP, hence, the v head of the matrix clause can access the DP in the embedded clause without complications (this also holds if the moving DP is the sole argument of an unaccusative verb, if unaccusative v is not a phase head, see Chomsky (2001)). However, nothing prevents a movement path with intermediate landing sites if more phases (or other local domains) are postulated. The only question that arises is that of how the movement is triggered, but this is a general question that arises with successive-cyclic movement and is not specifically tied to the present analysis.[22] Hence, successive-cyclic movement of a DP from the marking to the

[22] Several proposal about the trigger of intermediate movement steps have been worked out: These intermediate movement steps may be non-feature driven, as proposed in Heck and Müller (2003), or triggered by inserted edge features under violation of Inclusiveness, as proposed by Chomsky (2001).

reference clause is fully compatible with the movement approach to SR, but the question whether DP movement from one θ-position to another θ-position stops in intermediate landing sites is somewhat orthogonal to the main goals of this paper. The movement analysis makes a further prediction: Movement lands in specifier positions,[23] but this does not have to be Specv in which the agent-role is assigned (if Merge $\gg$ Move holds), as extensively discussed in section 3.2. It should be possible to find examples in which the DP in the reference clause that takes part in the SR system can have a different θ-role, as long as it is assigned to a specifier position, e.g. an experiencer (Belletti and Rizzi, 1988), a benefactive (viz. the role that an argument introduced by an applicative head receives, Hole (2008c)), a possessor (introduced in SpecD or SpecN, (Abney, 1987)) or a goal (introduced in SpecV or the Spec of a functional projection above VP). This is indeed born out in Gokana (Comrie, 1983, 32) and Kiowa (Watkins, 1993, 143).[24]

(37) a. mm̀ dá̋ ɛ́ gá̋ kɔ aè dɔ -ɛ̀
I heard him mouth that he fell LOG
I heard from him$_i$ that he$_i$ fell. *Gokana, source*

b. k^{h}odêde ámkut y´ę-cán gɔ a-koːdó-ǫː-thą:
suddenly your.letter 1SG.III-arrive and.SS 1SG.I-very-happy-feel
Suddenly your letter came to me$_i$ and I$_i$ felt very happy.
Kiowa, goal/benefactive

In Gokana in (37-a), SR involves the subject with the patient role of the embedded clause and the argument bearing the source role in the matrix clause. In Kiowa in (37-b), it involves the experiencer of the marking conjunct and the goal/benefactive of the reference conjunct.

Finally, the present approach predicts that SS marking should also arise when a subject DP is moved for other reasons than the checking of c-selection-features, because one of the important facts for realization of an embedded T head is whether there is a DP in its domain or not, it does not matter why there is no such DP in certain cases (cf. the discussion above on unaccusative and passive marking clauses). Hence, e.g. wh-movement (if it occurs overtly) of a subject DP should have the same effect and clauses like ”Who saw Mary and met John?”, ”Mary worked in

[23] In the analysis developed in this paper, movement *can* actually land in the complement position of the reference clause under certain circumstances (if Merge $\circ$ Move). Nevertheless, the relevant point is that if it lands in a specifier position, nothing requires that this is the specifier to which the agent-role is assigned, it can be any other specifier.

[24] Note, however, that Gokana and Kiowa are languages for which there are doubts whether they really have SR marking. Weisser (this volume) claims that the alleged SR system in Kiowa is something different and Keine (this volume) argues that SR in Gokana is indeed logophoricity.

the fields while who came?" or "Who do you think left?" should be SS marked in an SR language. Unfortunately, such data are very rare in grammars of SR languages and in addition, wh-movement of subjects is independently barred in some of the langugaes. I can thus not provide examples that would support or falsify this prediction.

4. Non-canonical Switch Reference

It has been observed that SR marking in many languages patterns in unexpected ways when a traditional view on SR as the expression of pure referential (non-)identity is pursued. Such "non-canonical" SR includes cases where the subject of two clauses are coreferent but there is a DS marker in the marking clause, and cases where two clauses clearly have referentially disjoint subjects but the marking clause exhibits SS marking. In this section I go through some examples and discuss how the present analysis can handle them.

An important observation that can be made when looking at the unexpected data is that these non-canonical cases often involve unaccusative, passivized or impersonal marking clauses, viz. clauses that lack an external argument. Amele has impersonal constructions in which an experiencer DP triggers morphological object agreement. Subject agreement is always 3rd singular (see (38-a)). A conjunct that occurs in verb series with a medial verb and such an impersonal construction exhibits SS marking (see (38-b)), the same holds for weather verbs in a medial conjunct. As both of these constructions do not possess an external argument that is introduced in Specv DS marking would be expected (the two subject DPs in the reference and the marking clause cannot be referentially identical because the marking clause does not possess an external argument), but the opposite is observed. Indeed, these conjuncts can also be marked by the DS marker, but then the clause receives a causative interpretation (see (38-c)). Attaching the other SR marker always leads to ungrammaticality.

(38) *Amele impersonal construction (Roberts, 2001, 201, 228)*:

a. ija wen t-ei-a
1SG hunger 1SG.do-3SG.SUBJ-TOD.P
I was hungry.

b. Ege co-cob-ob wen g-en
1PL SIM-walk-1PL.SS.R hunger 1PL.do-3SG.REM.P
As we walked, we became hungry.

c. Ege co-cob-oqon wen g-en
1PL SIM-walk-1PL.DS.R hunger 1PL.do-3SG.REM.P
As we walked, something made us hungry.

This apparently unexpected marking in (38-b) shows first that SR marking does not seem to be a pure reference-tracking system in which indices are compared; if it were such mismatches were completely unexpected. Second, the mismatch directly falls out from the specification of SR markers proposed in the present analysis, cf. (30): The SS marker is inserted into T if there is no DP in Specv. The morphological marking of the experiencer DP and the non-causative interpretation suggests that there is no external argument in the structure, hence the DS marker cannot be inserted for T and the default SR marker, namely the SS marker, has to be used. Thus, I propose that the morphology is blind as to whether there is no DP in Ts domain because it has been moved away or because there was no such DP from the beginning. In (38-c), however, the causative interpretation suggests that there is indeed an external argument in the structure (which is however, non-overt), which is the causer of the event described by the verb. Assuming that this phonologically zero DP possesses morphosyntactic features that are visible in the morphological component, the most specific SR marker, viz. the DS marker, fits and is inserted – there is a DP in Ts domain.
The same pattern is observed in Huichol (Comrie, 1983, 30): When the marking clause is unaccusative, SS marking occurs, as expected under the specification of VIs in (30).

(39) nunuuci nua-ka, paukuuweijyaazi
child arrived-SS beat-PASS
When the child arrived, it was beaten.

Another example of unexpected SR marking can be found in Imbabura Quechua (Cole, 1983; Hermon, 2001). In this language, there are two different impersonal constructions, lexical and desiderative impersonals. Again, morphological considerations and subjecthood tests lead us to the conclusion that the former have an external argument, but the latter do not; as expected by the specifications of VIs proposed here, one finds indeed DS marking with lexical and SS marking with (a certain kind of) desiderative impersonals. However, weather verbs and passives in Amele marking clauses only exhibit DS marking. This does not fall out from the system developed here, in fact the opposite is expected. The same holds in Seri when one of the clauses is unaccusative or passive (see (40), Farrell et al. (1991, 443)). In general, the present system cannot handle non-canonical DS marking because it presupposes that there is an element in Specv but there is no such element in unaccusative structures.

(40) ʔp-po-aːʔ-kasni *(ta)-X ʔp-si-oːʔa ʔa=ʔa
1sS-Ir-Pa-bite DS-UT 1sS-Ir-cry Aux=Decl
If I am bitten, I will cry.

Another variant of an SR system is open reference (OR). Languages with OR possess only one of the SR markers (an SS marker in Inuktitut (Pittman, 2005, 2)

and a DS marker in Dargi (Nichols, 1983, 254)). The other marker does not exist, instead the absence of this marker (or the addition of another marker in Inuktitut) does not imply anything about the referential relationship between the subject of the marking and the reference clause, they may or may not be coreferent. Consider the example from Inuktitut in (41). According to Pittman, -*llu* is the SS marker, -*ti* is added to -*llu* for OR.

(41) *Open reference in Inuktitut (Pittman, 2005, 2)*:

a. Alana-up ujagak atja-tlu-gu ani-vuk
alana-erg rock.abs carry-llu-3s go.out-intr.indic-3s
While Alana$_i$ was carrying the rock$_j$, she$_{i/*j/*k}$ went out.

b. pisuk-ti-llu-ŋa iŋŋi-lauq-tuq
walk-ti-llu-1s. sing-d.past-3s.
While I was walking, he was singing.

c. pisuk-ti-llu-ŋa iŋŋi-lauq-tuŋa
walk-ti-llu-1s. sing-d.past-1s.
While I was walking, I was singing.

Note first that in Inuktitut both the verb in the reference and the marking clause agree with their subject and in most cases this disambiguates the OR examples. But this is not the case when both DPs are 3rd person. The present approach cannot handle these facts, because one of the SR markers is always more specific than the other and its absence is mysterious when the context requirements are met. A technical solution would be to impoverish the context before vocabulary insertion takes place (cf. Bonet, 1991), but it is not clear to me, what the motivation for such a deletion rule would be. In Dargi, for example, the DS marker is inserted if there is a DP in Ts domain, but it need not be inserted, because the absence of the marker does not necessarily imply referential identity of the subjects. Hence, something must be able to block the insertion of the DS marker, e.g. an optionally impoverished context feature.

The last phenomenon that I discuss is overlapping reference. According to Comrie (1983), there are three different cases attested in the languages of the world, in which SS marking is possible when the referents of the marking (MC) and the reference clause (RC) stand in a subset/superset relation:

- Referent of the RC contains referent of the MC (see (42))
- Referent of the MC contains referent of the RC (see (43))
- Each of the referents of the (subject) DP in the MC and the RC contains at least one member that is also included in the subject of the other clause.

(42) ko m-p-áskin ta-X / Xáa ʔaa ʔa-síi-škam-aʔa
3 2-DF-paddle DS.FUT-COND / soon there 1PL.SUB-FUT-arrive.PL-TM
If you (included in the group) paddle with it, soon we'll enter there.
Seri (Moser, 1978, 115)

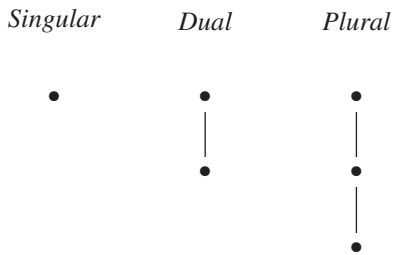
(43) *Choctaw (Davies (1984, 123), see also Amele (Roberts, 1988) and Diyari (Wiesemann, 1982)):*

a. alhiha-t chokka kashoffi-cha Chan-at tamaha ia-tok
group-NOM house clean-SS John-NOM town go-PST
The group (including John) cleaned the house and John went to town.

b. alhiha-t chokka kashoffi-na Chan-at tamaha ia.tok
group-NOM house clean-DS John-NOM town go-PST
The group (excluding John) cleaned the house and John went to town.

In addition, Comrie (1983, 35) states: "While languages may vary as to whether they treat overlapping reference as same-subject or different-subject, they are more likely to treat as same-subject instances where the referent of the controlling clause noun phrase is properly contained within that of the marked clause than vice versa." The movement analysis can handle this most frequent pattern if the ϕ-features of the involved DPs are decomposed and if movement involves copying (see the discussion in the last section). Assume, for example, that there is only a number difference between the DPs in the reference and matrix clause such that there is a plural DP in the marking and a corresponding singular DP in the reference clause. For ease of exposure, I take number to be decomposed and structured as proposed by Trommer (2006):

(44) *Iconic Representation of Number*



Note that the representation of the singular and the dual is a subset of the plural representation. Now, if movement is copying and the marking clause contains a plural subject, copying can involve only a subset of the features that make up the plural (*full* vs. *partial copying*, cf. Barbiers et al., 2009). In this way, the copy

of a single bullet, hence a singular entity, can be moved to the reference clause. The DP from which a part is copied must be identifiable as a copy and hence invisible for the VIs in the morphological component when vocabulary insertion takes place such that the SS marker is inserted. This can be achieved under the assumption that the whole DP is marked as a copy even if only a subpart of it has been copied. The same can be done with other features as well, when they are decomposed (for person decomposition see e.g. Harley and Ritter (2002); Béjar (2003)). Of course, this suggestion does not work for the other cases of overlapping reference described by Comrie, unless one is willing to add decomposed items to a representation after movement has taken place.

5. Conclusion

In this article I have shown that the cross-linguistic properties of Switch reference can be derived under a movement theory for same subject configurations. Adopting by and large the framework developed by Boeckx et al. (2010) (and previous works by these authors) for obligatory control that Switch reference shares a lot of properties with, I proposed that a DP whose referent seems to be shared (descriptively spoken) by two clauses exists indeed only once, but it is moved from a θ-position in the marking to a θ-position in the reference clause, where it is overtly realized. In different subject configurations, no such movement applies, instead there are two different DPs, one in the marking clause and another one in the reference clause. In this way, no indices and additional mechanisms that compare or determine reference (like the Binding Principles) are needed to derive referential (non-)identity. In addition, the SR marker is no longer an item that expresses referentiality, but an item which realizes the T head in a marking clause. The difference between DS and SS marking depends on T's structural environment, which changes when movement has taken place. Furthermore, some of the non-canonical instances of SR marking have been shown to fall out from the system, especially those with unexpected SS marking. I made some tentative suggestions for the remaining instances, but more elegant explanations should be found in future research.

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Switch-Reference as Interclausal Tense Agreement: Evidence from Quechua

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Abstract

In this paper, I propose that switch-reference in Quechua can best be analyzed as agreeing tense. Given the properties of the Quechuan switch-reference system and the clause structure of Quechua, I assume that a switch-reference adverbial clause does not have a valued tense feature and must agree with its superordinated clause in tense. Tense agreement is only possible if the subjects of both clauses are identical. The same subject marker is analyzed as the spell-out of successful tense agreement, while the different subject marker is the spell-out of failed agreement. I argue that this approach to switch-reference is conceptually as well as empirically compelling and raises the interesting question as to whether switch-reference is a true morpho-syntactic category or not.

1. Introduction

Switch-reference is a system of morphological marking that indicates whether the syntactic subjects of two different clauses are identical or not (Jacobsen 1967). In a canonical switch-reference system, the same subject (SS) marker is used in case the two subjects refer to the same entity; otherwise the different subject (DS) marker is used. In a non-canonical system, the use of the two markers depends on additional factors (cf. Stirling 1993).

Switch-reference systems occur in many unrelated languages, mainly in Australia, Papua New Guinea, and South and North America. Even though there are cross-linguistic tendencies concerning the syntactic and morphological properties of

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switch-reference systems (Haiman and Munro 1983), the systems are characterized heavily by language-specific properties, which leaves no clear basis for a morpho-syntactic definition of switch-reference. Even the functional definition of switch-reference has been questioned for languages like e.g. Kiowa, where 'switch-reference' marks the identity of certain aspects (time, place, reason of doing something etc.) of two different situations rather than the referential identity of syntactic subjects (Watkins 1993; McKenzie 2007; see Weisser 2012 for discussion that such languages do not exhibit switch-reference).

Theoretically, the main challenge one faces when dealing with switch-reference is that switch-reference constitutes a non-local dependency, which invokes information of two different clauses. Therefore, one main goal for an analysis of switch-reference carried out in a phase-based derivational framework should be to model this non-local dependency locally, thereby minimizing the representational residue of the theory.

A second theoretical problem shows up in cases where the two sentences to be compared are in a subordination-superordination relation. In this case, the switch-reference markers show up on the subordinated clause cross-linguistically (Haiman and Munro 1983). This results in a potential look-ahead problem if derivation proceeds bottom-up, since the subordinated clause is built before the subject of the superordinated clause enters the derivation. This potential look-ahead problem must be overcome.

Finally, the empirical challenge for an analysis of switch-reference is its cross-linguistic diversity. In a successful analysis of switch-reference, the language-specific properties should fall out from the system without further ado.

In this paper, I focus on switch-reference marking in Quechua, an Amerindian language, spoken in Argentinia, Brasil, Bolivia, Chile, Columbia, Ecuador and Peru. The aim of this paper is to derive the properties of the Quechuan switch-reference system. Although the analysis may be transfered to other languages with similar properties as well, there is no claim that this analysis is suited for all switch-reference systems.

The main claim is to analyze switch-reference in Quechua as the morphological realization of an interclausal agreement relation between the heads of two clauses. More precisely, I claim that in Quechua, certain subordinated adverbial clauses lack tense and must enter into a tense agreement relation with their superordinated clauses. This agreement relation then additionally transmits information about the subject of the superordinated clause to the subordinated clause and enables a comparison between the subjects. The analysis will be carried out in the minimalist framework (Chomsky 1995, 2000, 2001, 2008) and is based upon fairly standard definitions of Agree and Merge. Importantly, the transmission of information about the superordinated subject is enabled without invoking a mechanism of feature sharing (cf. Pollard and Sag 1994; Frampton and Gutman 2000; Legate 2005; Pe-

setsky and Torrego 2007; Heck and Cuartero 2008) as done by Camacho (2010) for Pano and Muskogean languages.
The paper is structured as follows: in section 2, I will introduce the reader to the main properties of switch-reference in Quechua. In section 3, an analysis of switch-reference is presented which overcomes the two theoretical challenges of non-locality and look-ahead outlined above. Furthermore, it is shown how this analysis captures the properties of switch-reference marking in Quechua naturally. Section 4 provides a comparison between this approach and other approaches to switch-reference. Section 5 concludes.

2. Data

2.1. Switch-reference in Quechua

Quechua is a suffixing SOV language that has a switch-reference system in adverbial clauses. The subjects of the subordinated adverbial and the superordinated main clause are compared. If they are identical, the verbal suffix *-shpa* is used; if not, the verbal suffix *-pti* is used.[1]
(1) summarizes four important properties of switch-reference in Quechua based on the research by Cole (1982, 1983); Cole and Hermon (2011); Lakämper and Wunderlich (1998) and Weber (1989).

(1) *Observations*
   a. Switch-reference is canonical.
   b. The switch-reference marker occurs in the position of the tense marker.
   c. Switch-reference markers and tense/case-markers are mutually exclusive.
   d. Switch-reference markers can only occur with nominal person agreement markers.

In the rest of this section, these observations are explained in more detail and illustrated by data. In the data summary that follows I am abstracting away from dif-

[1]There is another same subject marker *-r*, which is in complementary distribution with *-shpa*. In what follows, I will not take this marker into account. See (Cole, 1983, 3), (Weber, 1983, 299) for details about the difference between *-r* and *-shpa*. Cole (1983) claims that the marker *-r* is used if the two actions described by the subordinated and the superordinated clause are contextually related, while *-shpa* is used if the two actions are not related. Weber (1983), on the other hand, says that there is no clear difference between the two markers.

ferences between the Quechuan dialects. The points I am focusing on here are the same in all dialects. As far as I know, the only differences between the dialects concern (i) the morphological realization of the switch-reference markers and (ii) the co-occurrence of switch-reference markers and person agreement markers. Pecularities of certain dialects will be mentioned in the footnotes.
The first observation (1-a) is that switch-reference in Quechua is canonical, i.e., the same subject marker *-shpa* is used whenever the subjects of the adverbial and the main clause are identical and the different subject marker *-pti* is used when the two subjects differ (Cole 1982, 1983; Weber 1989).

(2) *Identical subjects (Ancash)*

a. *chakra-chaw urya-**shpa**, pallamu-rqu-u wayta-kuna-ta*
field-LOC work-SS pick-RPST-1 flower-PL-ACC
"While I worked in the field, I picked flowers." *(Cole, 1983, 2f.)*

b. **chakra-chaw urya-**pti**-i, pallamu-rqu-u wayta-kuna-ta*
field-LOC work-DS-1 pick-RPST-1 flower-PL-ACC
"While I worked in the field, I picked flowers." *(Cole, 1983, 3)*

(3) *Different subjects (Ancash)*

a. *chakra-chaw urya-**pti**-i, María pallamu-rqu-n wayta-kuna-ta*
field-LOC work-DS-1 Maria pick-RPST-3 flower-PL-ACC
"While I worked in the field, Maria picked flowers." *(Cole, 1983, 3)*

b. **chakra-chaw urya-**shpa**, María pallamu-rqu-n wayta-kuna-ta*
field-LOC work-SS Maria pick-RPST-3 flower-PL-ACC
"While I worked in the field, Maria picked flowers." *(Cole, 1983, 3)*

In the sentences in (2), the subjects of the adverbial clause and the main clause are identical. In this case, the same subject marker *-shpa* must be used. In (3), the two subjects are different and therefore, the different subject marker *-pti* occurs.[2]
The second observation (1-b) is that switch-reference markers occur in the position of tense markers, i.e. between object and subject agreement markers, as can be seen in (4).

[2]The only exception to this cross-dialectal generalization is found in Imbabura Quechua where subjunctive adverbial and complement clauses are not marked by the suffixes *-shpa* and *-jpi* (~ *-pti*), like indicative adverbial clauses, but by *-ngapaj* and *-chun* respectively (Cole 1982, 1983; Cole and Hermon 2011). Cole (1983) shows that this additional switch-reference system is non-canonical in contrast to the system outlined in (2)–(3). In what follows, I will only consider the canonical *-shpa/-pti*-system found in all dialects of Quechua.

(4) *Ancash*

a. *rika-ya-ma-**rqa**-yki*
see-PL-1OBJ-PST-2
"you(pl) saw me/us"
"you(sg) saw us" *(Lakämper and Wunderlich, 1998, 115)*

b. *rika-ma-**pti**-yki*
see-1OBJ-DS-2
"when you see me" *(Lakämper and Wunderlich, 1998, 123)*

In (4), the past tense marker *-rqa* as well as the different subject marker *-pti* occur between the object agreement marker *-ma* and the subject agreement marker *-yki*.[3] Note that the switch-reference clause in (4-b) could be translated as "*when you saw me"* as well, in case the matrix clause is past, i.e., semantically, the tense of a switch-reference adverbial clause is identical to the tense of its superordinated clause (Cole 1982). Now, except for the verbal present tense marker, all tense markers are overt (see section 3.5.1.2). Since the tense of a switch-reference adverbial clause is not fixed but depends on the tense of its matrix clause, there is no empirical evidence that switch-reference clauses exhibit a zero tense marker. Instead, the position of the tense marker is filled by the switch-reference marker.
The third observation (1-c) states that switch-reference markers do not co-occur with tense and case markers. Since switch-reference markers occupy the position of tense markers, one could argue that they are expected not to co-occur with tense markers. But interestingly, case markers are excluded from these contexts as well, whereas such markers can occur in adverbial clauses that have a tense marker and no switch-reference marker, as shown in (5-a) vs. (5-b).[4,5]

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[3](Lakämper and Wunderlich, 1998, 115, fn.1) note that Ancash Quechua uses the nominal 2nd person marker *-yki* instead of the expected verbal marker *-nki* when it follows the past tense marker *-rqa*. This is an idiosyncracy of Ancash and not found in other dialects.

[4]The tense markers in adverbial clauses are claimed to be nominalizers or nominalizing subordinators (Cole 1982; Lefebvre and Muysken 1988; Weber 1989). However, like verbal markers, they have a tense function (Costa 1972, Cole and Hermon 1981, Weber 1983, 25). See section 3.5 for a paradigm of verbal and nominal tense markers.

[5]Oblique cases are glossed as case in Cole and Hermon (1981); Lefebvre and Muysken (1988); Weber (1989) but glossed as adpositions in Cole (1982). Here, I follow Cole and Hermon (1981); Lefebvre and Muysken (1988); Weber (1989) and take such markers to be case markers.

(5) *Huallaga*

a. *non-SR adverbial clause*

*tamya-**na**-n-**pita***
rain-NMLZ.FUT-3-ABL

"because it is going to rain" *(Weber, 1989, 294)*

b. *SR adverbial clause*

*maqa-rkU-ma-**shpa**-n-**Ø***
hit-thereupon-1OBJ-SS-3

"after he hit me" *(Weber, 1989, 298)*

In (5-a) the nominalizing tense marker *-na* occurs together with the ablative case marker *-pita*. In (5-b), the SS marker *-shpa* occurs instead of a tense marker and the adverbial clause is not case-marked, illustrated above by a zero marker -Ø.
Finally, the last observation (1-d) is illustrated in (6). The data show that person agreement markers are taken from the nominal paradigm in switch-reference clauses, even though no nominalizing tense markers occur (Cole 1983; Lakämper and Wunderlich 1998).[6]

(6) *Ancash*

a. *punu-**nki***
sleep-2
"you sleep" *(Lakämper and Wunderlich, 1998, 119)*

b. *wamra-**yki***
child-2
"your child" *(Lakämper and Wunderlich, 1998, 119)*

c. *Alqu-wan pukllа-pti-**yki** wamra asi-n.*
dog-INSTR play-DS-2 child laugh-3
"When you play with the dog, the child laughs."
(Lakämper and Wunderlich, 1998, 122)

In (6-a), the clause is not nominalized and the verbal marker *-nki* is used. (6-b) shows, that in nominal phrases a different marker *-yki* is used. Now in (6-c), the same nominal marker *-yki* as in (7-b) is used.

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[6]Here, dialects differ in the way person agreement is realized in switch-reference adverbial clauses. Imbabura Quechua has no person agreement markers at all, which results from the lack of a nominal paradigm for person agreement markers (Cole 1983). In Ancash Quechua, on the other hand, subject agreement is only realized in different subject contexts (Lakämper and Wunderlich 1998). Finally, in Huallaga Quechua, subject agreement is realized in different subject as well as same subject contexts (Weber 1989).

In the rest of this section, I will shortly summarize the main points about Quechuan clause structure. Afterwards, in section 3, an analysis is developed that is able to derive both the clause structure of Quechua and the four observations about switch-reference summarized in (1).

2.2. Clause structure in Quechua

Quechua is an SOV language which realizes all grammatical categories as suffixes (Cole 1982; Stewart 1988). There are no independent grammatical morphemes.[7] The order of the suffixes is the same in all dialects of Quechua with the exception of the plural marker, which occurs right after the verbal stem in Quechua I dialects and before or after the mood marker in Quechua II dialects (Lakämper and Wunderlich 1998). In the analysis presented below, I will focus on the markers in bold face, i.e. the order 'stem-object-tense-subject-case'.[8]

(7) *Suffix Order in Quechua I and Quechua II dialects*
(adapted from (Lefebvre and Muysken, 1988, 73); (Lakämper and Wunderlich, 1998, 116)
a. QI:
Stem-Number-**Object**-**Tense**-**Subject**-(Mood)-(**Case**)
b. QII:
Stem-**Object**-**Tense**-**Subject**-(Mood)-Number-(Mood)-(**Case**)

The orders of the markers in bold face are illustrated in (8) for Huallaga Quechua, a Quechua I dialect, and in (9) for Cuzco Quechua, a Quechua II dialect.

(8) a. *pro* [*pro* *pro* ***mucha-ma-na-n-ta***] *muna-n*
3SG$_i$ [3SG$_j$ 1SG kiss-1OBJ-NMLZ.FUT-3-ACC] want-3
"He$_i$ wants him$_j$ to kiss me." *(Weber, 1989, 289)*
b. Stem Object Tense Subject Case
mucha ma na n ta

[7] See, however, Lefebvre (1980) for arguments that Quechua has lexical complementizers.

[8] In most cases, the agreement marker after the tense marker realizes the person features of the subject. There are, however, cases where the marker realizes the features of the object. See Lakämper and Wunderlich (1998) for details. Since person agreement in switch-reference clauses is to some extent dialect-specific, I will not provide an analysis for it here.

(9) a. *Xwan* [*tata-y-pa* *pro* ***maqa-wa-sqa-n-ta***] *uyari-n*.
Juan [father-1-GEN 1SG beat-1OBJ-NMLZ.PST-3-ACC] hear-3
"Juan heard that my father had beaten me."
(Lefebvre and Muysken, 1988, 16)

b. Stem Object Tense Subject Case
maqa wa sqa n ta

Note that Quechua has subject as well as object *pro*-drop. In (8), all arguments are *pro*-dropped, indicated by different covert *pro*s. In (9), the 1st person object is dropped, again indicated by *pro*.
In (8) and (9), the suffix orders are exemplified for verbs of subordinated clauses. Subordinated clauses are always nominalized, while main clauses are not. Nominalizations can be recognized by three properties: (i) a case marker, (ii) a nominalizing tense marker and (iii) nominal person agreement markers.
Since switch-reference adverbial clauses lack the nominalizing tense morpheme as well as the case marker (cf. (5)), Cole (1982); Weber (1989); Cole and Hermon (2011) claim that these clauses are not nominalized, in contrast to all other subordinated clauses. Under these analyses, however, there is no explanation why switch-reference markers can only be combined with nominal person agreement markers.
In the next section, I will present an analysis of switch-reference which assumes that switch-reference adverbial clauses are nominalized and which thereby captures the fact that nominal person agreement markers occur even though no nominalizing tense markers nor case markers occur. In the first part of the next section (3.1–3.3), I will show how the facts about the clause structure of Quechua follow from standard assumptions of the minimalist framework and the framework of Distributed Morphology. Afterwards (3.4–3.5), I will show how the system can be extended in order to derive switch-reference and how the system accounts for the properties of switch-reference listed in (1).

3. Analysis

3.1. Assumptions about the syntactic derivation

The analysis of the data presented in section 2 will be carried out in the minimalist framework (Chomsky 1995, 2000, 2001, 2008). I assume that the derivation is cyclic and proceeds bottom-up. Clauses have a structure as in (10) with three functional projections above VP. Since Quechua is an SOV language, all phrases are right-headed.

(10) $[_{CP}\ [_{TP}\ [_{vP}\ DP_2\ [_{VP}\ DP_1\ V\ ]\ v]\ T]\ C]$

The functional head v introduces the external argument (subject), agrees with the internal argument (object) in ϕ-features and assigns accusative case to it. T is the head where tense and aspect features are located. Additionally, T assigns nominative case to the subject via ϕ-agreement. C is the head of the clause and contains features that are relevant to the whole clause, such as topic/focus features, clause type etc.
Nominalized clauses have an additional DP-layer.

(11) $[_{DP}\ [_{CP}\ [_{TP}\ [_{vP}\ DP_2\ [_{VP}\ DP_1\ V\ ]\ v]\ T]\ C]\ D]$

The two syntactic operations Merge and Agree are defined as in (12) and (13).

(12) MERGE ($\{\alpha\},\{\beta\}$) *(Chomsky 1995)*
$= \{\alpha, \{\alpha, \beta\}\}$

(13) AGREE (X[P={∗F∗:__,. . . }], Y[G=F:VAL,. . .])
= X[~~∗F∗~~:VAL], Y[F:VAL] *(Chomsky 2001; Baker 2008; Richards 2008)*
iff
a. X and Y are in a c-command relation and
b. X matches Y in P, where match = non-distinctness

The operation Merge in (12) connects two independent syntactic objects α and β, where one of the two objects, here α, projects. Note that movement is considered to be Remerge (Epstein et al. 1998; Bobaljik 1995; Gärtner 1997; Starke 2001; Zhang 2004; Boeckx 2008 among others).
The operation Agree in (13) takes a probe P on a head X with an unvalued feature F ([∗F∗:__]) and a goal G with a valued F ([F:VAL]) on a head Y.[9] If either X c-commands Y or Y c-commands X and if X and Y are not distinct with respect to the feature(s) of P, F on X gets checked and valued. Following Richards (2008), I assume that a probe P can consist of a single feature or more than one feature. Richards (2008) shows that this assumption leads to an elegant analysis of defective intervention in Icelandic, partial agreement in English *there*-constructions and the Russian genitive of negation. (See also Assmann 2010, who uses this approach to derive PCC effects in Tagalog.)
Furthermore, there might be several different probes on one head. Curly brackets signal which features belong to a probe. The matching condition (13-b) always considers the non-distinctness with respect to all features of a probe P on a head

[9]For the notation, see Sternefeld (2006); Heck and Müller (2007); Lahne (2008).

X. Since P can consist of more than one feature, different scenarios are possible, as shown in (14).

(14) a. P = {α}
AGREE(X[{$*\alpha*$:__}],Y[α:VAL]) =
X[{~~$*\alpha*$~~:VAL}],Y[α:VAL]

b. P = {α,β}
AGREE(X[{$*\alpha*$:__,$*\beta*$:__}],Y[α:VAL$_1$,β:VAL$_2$]) =
X[{~~$*\alpha*$~~:VAL$_1$,~~$*\beta*$~~:VAL$_2$}],Y[α:VAL$_1$,β:VAL$_2$]

c. P = {α,β}
AGREE(X[{$*\alpha*$:__,$*\beta*$:__}],Y[α:VAL$_1$]) =
X[{~~$*\alpha*$~~:VAL$_1$,$*\beta*$:__}],Y[α:VAL$_1$]

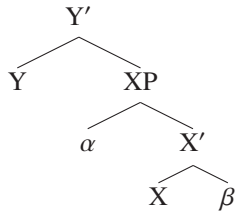
d. P = {α,β}
AGREE(X[{$*\alpha*$:__,~~$*\beta*$~~:VAL$_2$}],Y[α:VAL$_1$,β:VAL$_2$]) =
X[{~~$*\alpha*$~~:VAL$_1$,~~$*\beta*$~~:VAL$_2$}],Y[α:VAL$_1$,β:VAL$_2$]

e. P = {α,β}
AGREE(X[{$*\alpha*$:__,~~$*\beta*$~~:VAL$_2$}],Y[α:VAL$_1$,β:VAL$_3$]) =
no match → no Agree possible

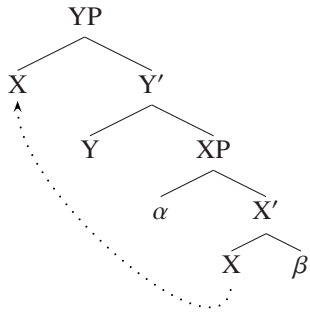
In (14-a), P consists of a single feature [α] and X and Y match trivially. Agree can apply in this case. If P consists of more than one feature, as in (14-b) to (14-e), four different cases are possible. First, all features of P on X can be unvalued and Y provides values for all the features of P, as in (14-b). Again, X and Y match in P since there are no contradicting feature values and Agree is possible. The same holds for (14-c), the only difference being that Y provides a feature value only for [α], leaving [β] unvalued. The other two cases are shown in (14-d) and (14-e). Here, one of the features of P—[β]—is already valued. In (14-d), the values for [β] are the same on X and Y. Thus, X and Y match in P and Agree can apply. In (14-e), however, the values for [β] are different, so that this time, X and Y do not match. Consequently, Agree is not possible in this case. The last two cases will become important in the analysis of switch-reference in section 3.5.

The last syntactic operation that is crucial for the analysis to follow is head movement. The exact implementation of head movement is not important here, as long as a moved head c-commands everything that the head of the target projection c-commands (cf. Surányi 2005; Matushansky 2006; Roberts 2010; Georgi and Müller 2010 among others). For sake of concreteness, I will adopt the approach of Matushansky (2006) that assumes that the landing sites of heads, as well as phrases, are specifier positions. Moved heads undergo the operation of m-merger in the morphological component.

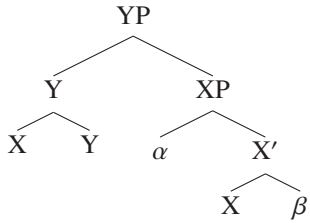
(15) a. *Before head-movement*



b. *After head-movement*



c. *After m-merger*



3.2. Assumptions about morphological realization

The morphological part of the analysis is carried out in the Distributed Morphology framework (Halle and Marantz 1993; Halle 1997; Noyer 1997). Distributed Morphology is a realizational framework, i.e., morpho-syntactic features of terminal nodes (*morphemes*), which have been manipulated in the syntax, are realized post-syntactically by *markers* with phonological content (*(Late) Vocabulary Insertion*). The combination of the markers and the morpho-syntactic feature bundles they realize are called *vocabulary items*. Importantly, a vocabulary item need not be fully specified, i.e., its feature specifications may be a proper subset of the morpheme's feature specification (cf. *Subset Principle* in (16)). In case, more than one marker matches the feature specification of a morpheme, the most specific item is chosen, i.e. the one with most features.

(16) *Subset Principle* (*Halle 1997*)

The phonological exponent of a vocabulary item is inserted into a morpheme if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the vocabulary item contains features not present in the morpheme. Where several vocabulary items meet the conditions for insertion, the item matching the

greatest number of features specified in the terminal morpheme must be chosen.

Following Baker (1988); Ritter (1995) among others, I assume that head movement leads to realizing morphological markers as affixes, i.e., head movement feeds affixation. However, I do not claim that head movement is the only reason for affixation (in line with Donati 2006; Matushansky 2006).
In order to get the right linear order of the morphemes, I adopt the *Mirror Principle* in (17) (Baker 1985).

(17) *The Mirror Principle* (*Baker 1985, 375*)
Morphological derivations must directly reflect syntactic derivations (and vice versa).

The Mirror Principle ensures that the linear order of the markers is the same as the order in which the respective heads they realize have entered the derivation. Note that the Mirror Principle might be a theorem derived from theoretical primitives (cf. Surányi 2005). This depends on the exact implementation of head movement, which I have not been explicit about since it is not relevant for the discussion here.

3.3. Deriving Quechuan clause structure

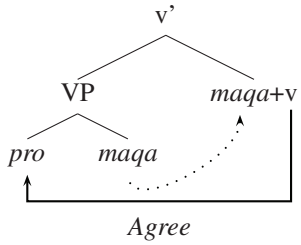
With these assumptions in mind, we can now derive the facts about clause structure in Quechua, outlined in section 2.2.
The embedded clause in (18), repeated from (9-a), can be derived as follows.

(18) *Xwan* [*tata-y-pa* *pro* ***maqa-wa-sqa-n-ta***] *uyari-n*.
Juan [father-1-GEN 1SG beat-1OB-NMLZ.PST-3-ACC] hear-3
"Juan heard that my father had beaten me."
(Lefebvre and Muysken, 1988, 16)

At first, the verbal stem *maqa* and *pro* are merged.[10] Then, v is merged, agrees with the internal argument in ϕ-features and V is head-moved to v.

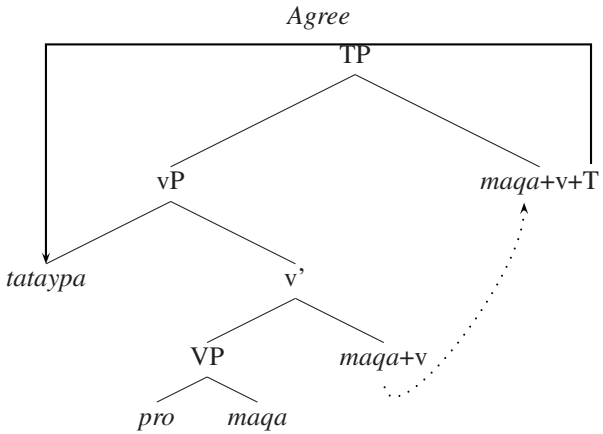
[10] Alternatively, a phonologically overt pronoun is merged, agrees with the predicate and is deleted under recoverability (Chomsky 1980).

(19)



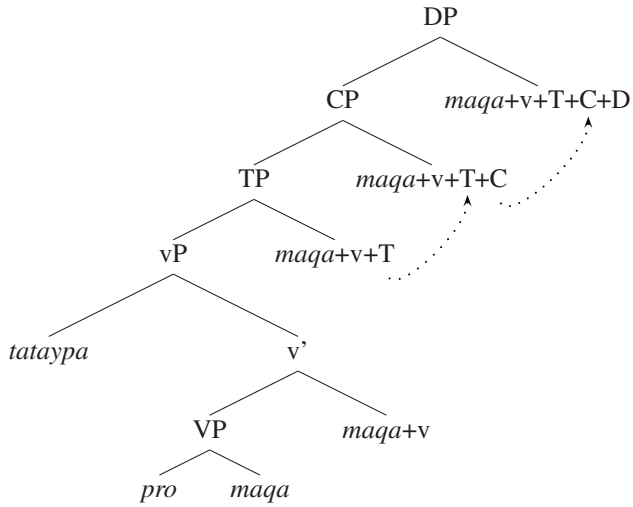
Next, *tataypa* is merged as the external argument, followed by T. T agrees with *tataypa* in ϕ-features and the complex head *maqa*+v moves to T.

(20)



Finally, C and D are merged. The complex head *maqa*+v+T first moves to C and then *maqa*+v+T+C moves to D.

(21)



Afterwards, the whole DP is merged as the internal argument of the matrix clause and receives accusative case from the matrix v.

After the derivation has finished, vocabulary insertion takes place and markers are inserted into the morphemes. For the ϕ-features on v, which have been valued by the internal argument *pro*, the object agreement marker *-wa* is inserted. The tense morpheme on T is filled with the nominal past marker *-sqa*. The ϕ-features of T are realized by *-n*. (In order for this to happen, I assume that T undergoes *Fission* (Noyer 1997), so that more than one marker can be inserted into T.) Finally, the case features on D are realized by the accusative marker *-ta*. For sake of completeness, I assume that C is realized by a zero marker. The vocabulary insertion is summarized in (22).

(22)

v[ϕ:1sg]	↔	<wa>
T[tense:pst]/D	↔	<sqa>
T[ϕ:3sg]	↔	<n>
C	↔	<Ø>
D[case:acc]	↔	<ta>

Now, the morpho-syntactic features are realized by markers following the Mirror Principle. The v head bears the agreement features of the object after Agree. Since it is the first functional head that has entered the derivation, the object agreement marker is realized right after the stem. Next, the features on T, viz., the subject agreement features and the tense features, must be realized. They follow the object agreement marker because T enters the derivation after v. Finally, the marker

farthest away from the stem must be the case marker, as D is the last head that is merged in the embedded clause.

(23) *Order of heads and morphemes*

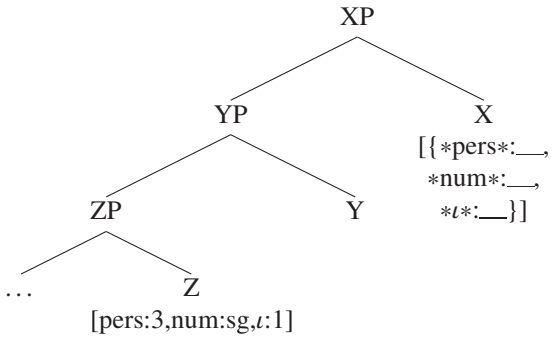
Steps:	1.	2.	3.	4.	5.
Heads:	V	v	T	C	D
Markers:	*maqa*	*-wa*	*-sqa*	*-Ø*	*-ta*

Having derived the clause structure and marker order of a simple Quechuan nominalized clause, I will now outline concrete assumptions about the feature specification of the heads v and T and show how the properties of switch-reference in Quechua (cf. section 2.1) can be derived.

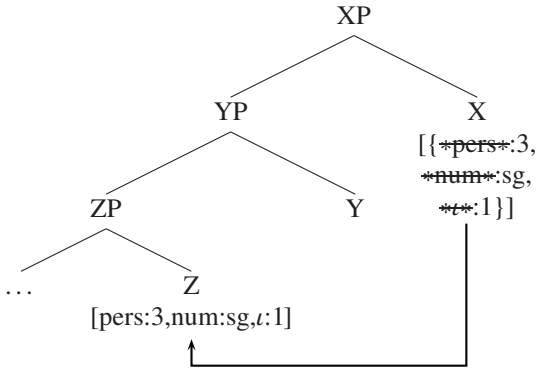
3.4. Assumptions about the feature specifications of v and T

There are two points which are important for the analysis of switch-reference in the next section. They concern ϕ-features and tense features.
ϕ-features are important for agreement of the verbal complex with its arguments. Unvalued ϕ-features on v trigger Agree with the internal argument and unvalued ϕ-features on T trigger Agree with the external argument as described above in section 3.3.
ϕ-features are person, number and gender. Henceforth, gender will be ignored as it is of no importance in the analysis of switch-reference in Quechua. Following Řezáč (2004*a*,*b*, 2006) (cf. also Browning 1989; Wechsler and Zlatić 2000, 2003; Wechsler to appear for similar ideas), I assume that the referentiality of nominal phrases is encoded by an index feature [ι], which takes part in object and subject agreement. Possible values for [ι] are integers $i \in \mathbb{N}$. It should be noted, that the index feature presented here does not necessarily violate the inclusiveness condition (Chomsky 1995, 228). Index features can be considered to be already present on DPs in the numeration, with a value maybe yet to be specified (cf. Agree approaches to binding à la Fischer 2004).
Unvalued index features [ι] on v and T are checked by valued features on the internal argument and the external argument respectively. As any other feature, the index feature might be part of a complex probe or constitute a probe by itself. For sake of concreteness, I assume that the index feature is part of the ϕ-probe on v and T.
Now, a more concrete version of ϕ-Agree can be given. A head X that bears an unvalued person, number and index feature enters into Agree with a head Z that bears valued features.

(24) a. *Before Agree*



b. *After Agree*



In (24), X agrees with Z in the ϕ-features [pers] and [num] and in the index feature [ι]. The c-command condition of Agree is fulfilled since X c-commands Z. The matching condition is trivially fulfilled because there are no valued features on X in (24-a), hence, no contradiction of feature values is possible.

The second feature I want to make concrete assumptions about is the tense feature. Tense is encoded by the morpho-syntactic feature [tense], which might take values such as [past], [future], [present] etc.[11] The tense feature is located on T. In what follows, I assume that T might bear a valued tense feature or an unvalued one (cf. also the feature sharing approach of Szucsich 2009 and the zero-tense approach of Kratzer 1998), i.e., the value of a tense feature can also be received via Agree with the valued tense feature of another clause.

Concretely, I assume that a T head may enter the derivation with a valued or an

[11] Later in section 3.5, I will decompose the tense feature into two binary features [±pst] and [±fut]. The decomposition does not affect the syntactic analysis in any way and is only relevant for the morphological analysis, so that the tense feature will not be decomposed until section 3.5.1.2.

unvalued tense feature. There are no restrictions concerning the occurrence of the types of tense feature. If the tense feature is unvalued, T has to enter into tense Agree with another clause. If the T of an adverbial clause bears an unvalued tense feature, it must agree with the superordinated clause in tense. Morphologically, this tense Agree will be realized by switch-reference marking.

On the other hand, if the T of an adverbial clause bears a valued tense feature, this will be realized by a tense marker.[12]

Following (Partee 1973; Kratzer 1998; Schmitt 2000), I assume that tense is not an operator but a referential feature that shows similarities to pronouns. Hence, in addition to the morpho-syntactic feature [tense], T bears a tense index feature [ι_i]. The tense index feature [ι_i] is not the same feature as the index feature [ι]. It is important to make a difference between these two features because semantically, tense is not of type $< e >$ like nominal arguments of predicates but of type $< i >$ (Abusch 1997; Musan 1997; Kratzer 1998).

The tense index feature on T is unvalued when the tense feature is unvalued, i.e., a tense index can only be present if tense is present as well. This in turn means that in cases where tense Agree is necessary, tense binding happens as well (cf. Kratzer 1998). This assumption accounts for the fact that in Quechua, the tense of clauses with no tense markers of their own, i.e. switch-reference clauses, is identical to the tense of the superordinated clause (cf. (5), section 2.1).

Putting the assumptions about ϕ-features and tense features together, (25) shows the two different feature specifications of an adverbial T in Quechua.

(25) a. *Valued tense feature (no switch-reference marking)*
T[{∗pers∗:__, ∗num∗:__, ∗ι∗:__}, tense:VAL_1, ι_i:VAL_2]

b. *Unvalued tense feature (switch-reference marking)*
T[{∗pers∗:__, ∗num∗:__, ∗ι∗:__, ∗tense∗:__}, {∗ι_i∗:__}]

Important is the structure in (25-b) with the unvalued tense feature. Since the tense feature and the ϕ-features constitute a single probe, tense Agree is only possible, if the values of the ϕ-features and the value of the index feature on the two heads do not contradict. Assuming that the tense feature and the subject agreement features are both located on T, the unvalued tense feature of an adverbial T can only be

[12]There is no clarity regarding the question in which contexts switch-reference adverbial clauses are used and in which contexts non-switch-reference adverbial clauses are used. Cole (1982) gives the impression that the use of switch-reference marking depends on the semantic function of the adverbial clause, i.e., whether it is a time, manner, purpose clause etc. (Weber, 1983, 297), on the other hand, notes particularly that there is no semantic and/or pragmatic difference in the use of the two types of adverbial clauses.

valued if either the subject features on T are valued after the tense feature or if the subject features of both clauses—and hence the subjects—are identical.
The first option runs afoul with the assumption that derivation proceeds bottom-up and is cyclic because the adverbial clause is built before it is merged with a projection of the matrix clause. Hence, Agree between T and the subject after T has entered into tense Agree with the matrix clause would violate the Strict Cycle Condition (Chomsky 1973, 243).

(26) *Strict Cycle Condition*
No rule can apply to a domain dominated by a cyclic node A in such a way as to affect solely a proper subdomain of A dominated by a node B which is also a cyclic node.

Thus, only the second option remains, which essentially states that tense Agree is only possible if the subjects of two clauses are identical, i.e., if there is a same subject configuration.

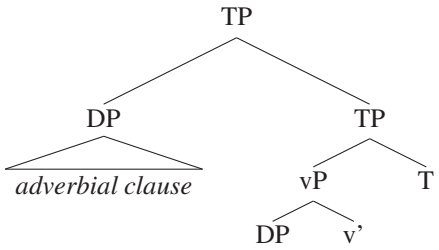
3.5. Deriving switch-reference in Quechua

3.5.1. How switch-reference marking comes about

3.5.1.1. The syntax

With the analysis developed so far, switch-reference adverbial clauses can now be derived. I assume that adverbial clauses are left-adjoined to TP in Quechua. As far as I know, there is no clear evidence from word order that adverbial clauses are in a different position. Adverbial clauses often appear to the left of the matrix clause but they may also follow the matrix clause (Weber, 1989, 297f). Since there is also no clear evidence that there is subject movement to Spec-TP, I will not assume subject movement here.
Like all other subordinated clauses, adverbial clauses are nominalized, i.e., they are headed by D.

(27)

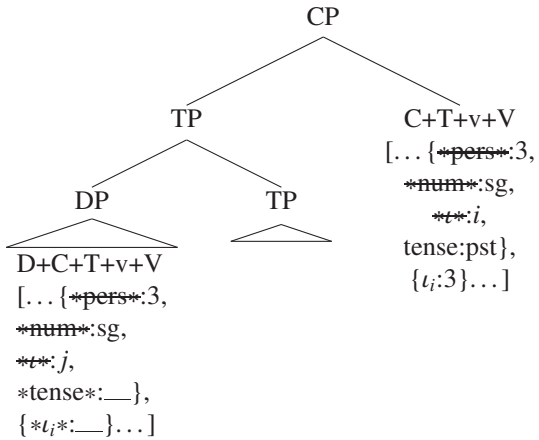


Due to head movement, the head of the adverbial clause is complex (cf. section 3.3).

Now, there are two types of adverbial clauses. The first type subsumes adverbial clauses which have tense of their own. The second type of adverbial clauses is tenseless and must get a tense value from another clause.

If the tense feature of the adverbial clause is unvalued, it has to enter into tense Agree with the T head of the matrix clause. Remember that an unvalued tense feature constitutes a probe together with the features for subject agreement, which must have been valued before the tense feature gets valued. The configuration before tense Agree is shown in (28) (with arbitrarily chosen values for [pers] and [num] and variables *i* and *j* for the subject indices).

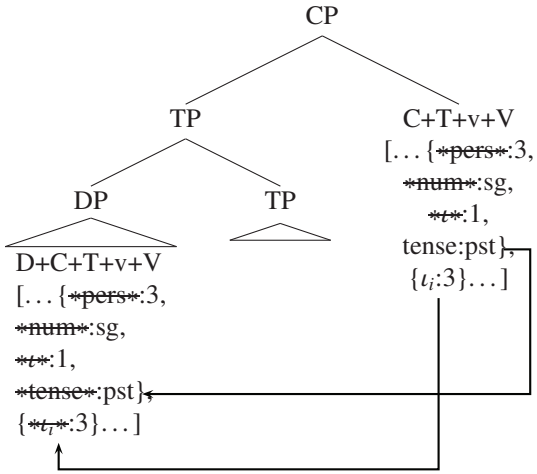
(28)



In this configuration, the T heads of the adverbial and the matrix clause have Agreed with their subjects, so that the ϕ-features and the index of the subjects are available on the respective T heads. Head movement makes the subject agreement and tense features of the T heads available on the highest heads in the respective clause. In a head movement approach à la Matushansky (2006) or Roberts (2010), the superordinated T, which is the goal, c-commands the T in the adverbial clause, which is the probe. Hence, the c-command condition of Agree is fulfilled with the goal and the probe standing in a c-command relation. So, only the matching condition decides whether Agree is possible or not. The two heads match if the values for the subject agreement features are identical. There are two possible scenarios that can emerge: either the values are identical and tense Agree is possible or the values are different and tense Agree is not possible. In order to illustrate the most interesting case, the person and number feature of the two subjects are taken to be identical. Then, only the values of the index features decide whether the matching condition is fulfilled or not.

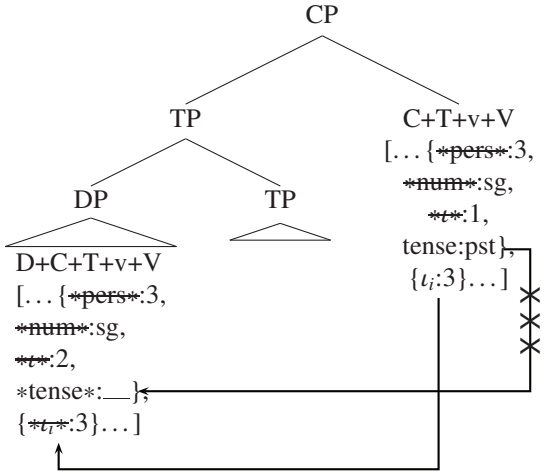
The first possibility is that $i = j$. In this case, tense Agree is possible as shown in (29), for $i = j = 1$.

(29)



In the other case, the indices of the two subjects are different ($i \neq j$). Here, the two T heads are not matching and tense Agree is not possible. Note that the tense index feature can always be valued since it constitutes a probe of its own.

(30)



In (30), the tense feature of the embedded T does not receive a value because there is no matching goal for the probe. However, the principle of Full Interpretation (Chomsky 1986) ensures that unvalued, i.e. uninterpretable, features must be checked by the end of the derivation. Thus, the derivation illustrated in (30) is supposed to crash. Here, I would like to propose that a post-syntactic mechanism

of default valuation assignes a default value [def] in case that the feature does not receive a value by Agree (see Frampton and Gutman 2000; Cho and Park 2004; Heck and Cuartero 2008 for similar proposals; Preminger 2010, 2011 for a proposal where morphological realization differs directly between failed Agree and successful Agree). The exact structure of [def] in the case of tense in Quechua will be outlined below in section 3.5.1.2.

Note that a mechanism of default valuation is wide-spread in the literature about agreement, though it has not always been mentioned explicitly. If, e.g., 3rd person is considered to be absence of person (Kayne 2000; Sigurðsson 2001; Anagnostopoulou 2003), the person feature of a ϕ-probe cannot be valued by a 3rd person argument and must be given a default value.

Up to this point, we have received the following result: in same subject configurations, where the subject of the adverbial clause and the subject of the matrix clause are identical, tense Agree is possible and in different subject configurations, where the two subjects are different, tense Agree is not possible, and the tense feature on the embedded T receives a default value.

(31) a. Same subject: T[~~*tense*~~:pst|pres|fut|...]
b. Different subject: T[~~*tense*~~:def]

3.5.1.2. The morphology

Now, the morphological realization of the features decides which markers are inserted. The main point of this part of the analysis is that the switch-reference markers are inserted whenever the tense feature is valued by Agree, while tense markers occur in case the tense feature enters the derivation valued. In other words, the important outcome of the analysis is that switch-reference markers and tense markers are realizations of the same morpho-syntactic category, namely tense, i.e., there is no morpho-syntactic category 'switch-reference' in Quechua.

(32) provides a closer look at the different morpho-syntactic contexts for marker insertion. According to the analysis above, the tense feature comes in the four different forms given in (32).

(32) *where* $\alpha \in \{pst, pres, fut\}$, $i, t \in \mathbb{N}$
a. C+T+v+V [{tense:α,~~*ϕ*~~:3sg,~~*ι*~~:i},{ι_i:t},...]
b. D+C+T+v+V [{tense:α,~~*ϕ*~~:3sg,~~*ι*~~:i},{ι_i:t},...]
c. D+C+T+v+V [{~~*tense*~~:α,~~*ϕ*~~:3sg,~~*ι*~~:i},{~~*ι_i*:t~~},...]
d. D+C+T+v+V [{~~*tense*~~:def,~~*ϕ*~~:3sg,~~*ι*~~:i},{~~*ι_i*:t~~},...]

There are three parameters that are important here. First of all, the tense feature may appear in context of a D head, i.e., the clause is nominalized (32-a), or not

(32-b-d). Second, the tense feature may be a probe feature (32-c-d) or not (32-a-b). Finally, the value of the tense feature is default (32-d) or not (32-a-c).
The paradigm of markers that occur in the slot between the object and subject agreement markers (cf. section 2.1) is given in (33) for Imbabura Quechua (Cole 1982, 142f., Cole and Hermon 1981, 10); for discussion see Kusters 2003; Hintz 2007). Note that this paradigm is simplified with respect to the tense/aspect paradigm of Quechua in order to illustrate the main point, namely why switch-reference markers and tense markers are mutually exclusive. If further tense/aspect distinctions are made, the morphological analysis outlined below must be refined.

(33)

TENSE		
	verbal markers	nominal markers
present	Ø	/j/
past	/rka/	/shka/
future	/nga/	/na/

SWITCH-REFERENCE	
same subject	/shpa/
different subject	/jpi/

In (34), the tense feature is decomposed into binary features [pst] and [fut]. This is just a refinement of the feature specification given aboves; all other points of the analysis stay the same. Here I assume that the default value for tense features is '+'.

(34) present = [–pst–fut]
past = [+pst–fut]
future = [–pst+fut]
default = [+pst+fut]

The vocabulary items that derive the correct distribution of the markers are given in (35). Following (Bejár, 2003, 155ff.), I assume that vocabulary items may differ between values that are added to a probe by Agree (italized features and feature values) and values that are already present on heads. Bejár (2003) needs this distinction in order to derive so-called *second cycle effects* of Agree. She also presents an alternative analysis where the vocabulary items have different contextual requirements. This alternative might be possible here as well, even though the implementation might be more complex then the analysis in (35).

(35) *Vocabulary items for tense feature in Quechua*

a. [–pst–fut] ↔ Ø
b. [+pst–fut] ↔ <rka>
c. [–pst+fut] ↔ <nga>
d. [–pst–fut]/D ↔ <j>
e. [+pst–fut]/D ↔ <shka>
f. [–pst+fut]/D ↔ <na>
g. [ ] ↔ <shpa>
h. [+*pst*+*fut*] ↔ <jpi>

The idea of the analysis in (35) is that the alleged switch-reference markers *-shpa* and *-jpi* (~ *-pti*) are in fact realizations of a tense feature valued by Agree, in contrast to the tense markers, which are realizations of tense features with inherent values. As shown in (35-a-f), the tense markers are inserted when the tense features have the respective feature values. Nominal tense markers are inserted in the context of a nominal head D (35-d-f). The different subject marker *-jpi* (~ *-pti*) is inserted when the tense features have default values due to failed Agree (35-h). The same subject marker *-shpa* is inserted in case the tense features do not have values of their own and do not both have default values (35-g). Hence, the same subject marker can be considered to be the *elsewhere marker*.

Summing up, I have developed an analysis of switch-reference that is able to overcome the two theoretical problems with switch-reference. First of all, the non-local dependency between the subjects of two different clauses is split up into different local Agree operations. When subjects Agree with the T heads of their clauses, the ϕ-features and the index of the subject become available on T. Then, the T heads enter into an Agree relation which is needed for independent reasons since the T head of one of the clauses lacks tense values. However, this Agree relation can only be established in case the subjects are identical. Otherwise, T receives a default value. The different appearances of the tense features are then realized with tense or switch-reference markers. Switch-reference markers realize tense features if their values have been added by Agree and tense markers are used if the tense features have values of their own.[13] Note that this analysis resembles previous analyses of switch-reference in several ways. A comparison of the approach developed here and other approaches to switch-reference is given in section 4.

In the final part of this section, I will show how the properties of the Quechuan

[13] Ritter and Wiltschko (2009, 2010) argue that T (their "INFL") actually bears an abstract morpho-syntactic category [±coincidence] which encodes *clausal anchoring* and can be instantiated by different concrete categories in different languages, e.g. tense, location or participant. In a way, the present analysis of switch-reference being a realization of T captures the spirit of their analysis.

switch-reference system fall out from the analysis of switch-reference developed so far, i.e., I will show how the agreement analysis of switch-reference can also overcome the empirical problem with switch-reference.

3.5.2. Deriving the properties of switch-reference in Quechua

The empirical problem with switch-reference is its cross-linguistic diversity. Switch-reference systems differ immensely in their properties. This makes it hard and probably impossible to analyze switch-reference cross-linguistically alike. In this paper, I solely focus on Quechua and show how the interclausal agreement analysis developed in this section so far is able to derive the four observations that can be made for switch-reference in Quechua (cf. section 2.1 for details).

(36) *Observations*

a. Switch-reference is canonical.
b. The switch-reference marker occurs in the position of the tense marker.
c. Switch-reference markers and tense/case-markers are mutually exclusive.
d. Switch-reference markers can only occur with nominal person agreement markers.

3.5.2.1. Switch-reference is canonical

The first property (36-a) follows from the assumptions about tense Agree. If the subjects are identical, tense Agree is possible and the tense features receive non-default tense values and must be realized by the same subject marker *-shpa* (cf. (35)). If the subjects are not identical, tense Agree is not possible and the tense features get default values, which in turn leads to insertion of the different subject marker *-pti*. Thus the switch-reference system in Quechua is correctly predicted to be canonical, with the different subject marker only occuring in different subject contexts and the same subject marker only occuring in same subject contexts.

3.5.2.2. The switch-reference marker occurs in the position of the tense marker

The second observation (36-b) follows as well because there is no morpho-syntactic category ‘switch-reference’, but only ‘tense’. Switch-reference is analyzed as *agreeing tense*. Hence, the switch-reference markers are tense markers

which must occur in the slot of tense markers between the object and subject agreement markers.

3.5.2.3. Switch-reference markers and tense/case-markers are mutually exclusive

The third property (36-c) combines two facts. First, tense markers and switch-reference markers cannot co-occur. Since both types of markers realize the tense feature, we expect that the markers cannot show up at the same time. However, overt case marking of the adverbial clause is also not possible when a switch-reference marker occurs. This is interesting since it is not obvious why this should be so. In what follows, I will provide an explanation for this puzzling fact.
Quechua has structural as well as semantic cases. The case markers for Huallaga Quechua, according to (Weber, 1989, 55ff.), are given in (37).[14,]

(37)

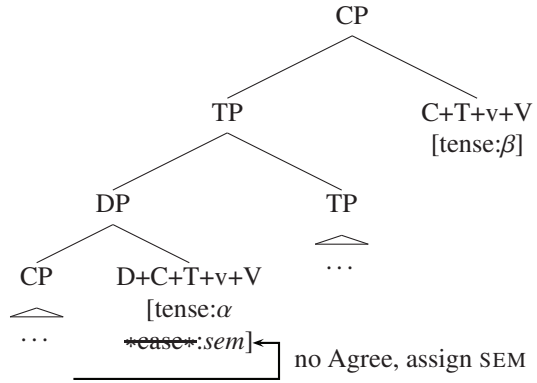
structural case	Ø	nominative
	/-ta/	accusative
Semantic case	/-yaq/~/-kama/	limitative
	/-man/	goal
	/-chaw/	locative
	/-paq/	purposive/benefactive
	/-pita/	ablative
	/-rayku/	sake
	/-naw/	similarity
	/-niraq/	like
	/-wan/	comitative
	/-pa/	genitive
	/-pura/	among

Here I assume that structural case is a reflex of Agree (George and Kornfilt 1981; Schütze 1997; Chomsky 2000). If a category agrees with T, it is marked with nominative case; if it agrees with v, it receives accusative case. Semantic cases, on the other hand, are typically assigned to adjuncts depending on its relation with the matrix clause (Wunderlich and Lakämper 2001). A DP is marked by semantic case, if it has not received structural case, i.e., if it has not agreed with T or v.

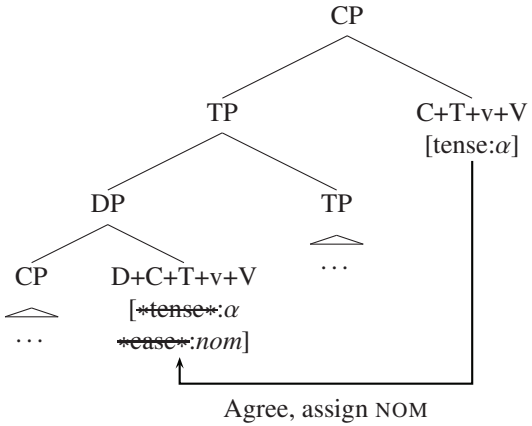
[14]The marker *-ta* is also used for dative case and case of direction. The genitive marker is not only used to indicate possession but also to indicate direction etc.

Now, in the theory developed above, the difference between switch-reference and non-switch-reference adverbial clauses is that the complex head of the former agrees with the matrix T in tense while the head of the latter does not do so. Since an Agree relation with T induces nominative case assignment, we expect that adverbial clauses which agree with T must receive nominative case. Adverbial clauses which do not Agree with T do not receive structural case and must be lexically case-marked. Note that if case is viewed as a true reflex of Agree and not constructed as an uninterpretable feature that T must get rid of, it must be possible for two categories α and β which Agree with the same head H to receive the same case. Concretely, it must be possible for both the matrix subject and the adverbial switch-reference clause to receive nominative case.

(38) a. *Non-agreeing adverbial clause*



b. *Agreeing adverbial clause*



Note that the locus of case assignment in (38-b) is not the goal, as in cases of case assignment to arguments but the probe. This is not problematic if case is considered to be a reflex of Agree. Then, case should be realized on all categories where possible. Since T is not able to receive case, only the adjunct clause, which

patible only with nominative case. As (37) shows, nominative case is realized by a zero marker (Ø). Thus, switch-reference adverbial are mutually exclusive with overt case markers.

3.5.2.4. Switch-reference markers can only occur with nominal person agreement markers

Finally, the last property (36-d) follows from the assumption that switch-reference clauses in Quechua are nominalized, i.e. headed by D. The subject agreement markers of Ancash Quechua are given in (39).[15] Object agreement markers are identical in verbal and nominal contexts.

(39) *Person markers (Ancash)* (Lakämper and Wunderlich, 1998, 119)

	VERBAL	NOMINAL
1	-ː	-ː
2	-nki	-yki
3	-n	-n
12	-ntsik	-ntsik

For the person agreement markers in (39), the vocabulary items in (40) are plausible. (The 1st person is marked by lengthening of the stem-final vowel: '-ː'.) Note that the person feature might be decomposed into binary features just like the tense feature. Nothing hinges on that.

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[15] Whether verbal or nominal markers are used, can only be seen in the 2nd person. All other markers are identical. In other dialects of Quechua, the marker for 1st person differs as well, e.g. Ayacucho Quechua in (i).

(i) *Person markers (Ayacucho)* (Lakämper and Wunderlich, 1998, 120)

	VERBAL	NOMINAL
1	-ni	-y
2	-nki	yki
3	-n	-n
12	-nchik	-nchik

(40) a. [1] ↔ <:>
b. [2] ↔ <nki>
c. [2]/D ↔ <yki>
d. [3] ↔ <n>
e. [ ] ↔ <ntsik>

If nominal person markers are specified by the context 'D', it is correctly predicted that in switch-reference adverbial clauses, which are nominalized just like any other adverbial clauses, the nominal person agreement markers must be used despite the absence of other markers that indicate nominalization. This is an important outcome of the theory.

To sum up, I have shown that the observations about switch-reference in Quechua can be captured by the agreement theory developed in this section. As far as I can see, no other theory of switch-reference is able to derive the same facts. I have also shown that an account that treats switch-reference adverbial clauses in Quechua as nominalized, thereby explaining the fact that nominal person agreement markers are used, is compatible with the fact that this kind of adverbial clause does not show any other sign of nominalization. It follows from the theory of interclausal tense agreement that switch-reference markers are mutually exclusive with nominal tense as well as with overt case markers.

4. Other approaches to switch-reference

In this section, the analysis developed in the section 3 is compared with other approaches to switch-reference with respect to conceptual properties and empirical adequacy.

4.1. Comparison with respect to conceptual properties

In general, it should be mentioned that the account presented here, is highly reminiscient of the binding approach of Finer 1985 (cf. Broadwell 1997; Watanabe 2000; Peachey 2006 for variants of it). In this type of theory, the switch-reference dependency is also split up into dependencies between the subject and the head of the clause and a dependency between the heads of two clauses, i.e., the comparison between two subjects is only established indirectly via clausal heads. The same idea was pursued in the agreement analysis developed above in section 3.5.

The main idea of Finer's approach is that the head of a switch-reference clause is either the same subject marker—an anaphor, which must be bound by the head of the superordinated clause—or the different subject marker—a pronoun, which

must not be bound. Binding is possible if the two heads bear the same index, which they have obtained via an indirect agreement relation with the subject. This derives the fact that the same subject marker can only be used if the subjects of the two clauses are identical (binding is obligatory), and the different subject marker can only be used if the two subjects differ (binding is not allowed). Since the agreement analysis pursued here involves referential indices which enter into a syntactic Agree relation, the dependency may also be considered to be a binding dependency, just as in Finer (1985).

There are, however, three points in which Finer's approach and the approach presented here differ. First of all, the agreement analysis is build upon the idea that switch-reference is *not* a proper morpho-syntactic category. Rather, what we observe as switch-reference marking is in fact only a subsystem of another morpho-syntactic category, namely tense.

Another difference to the binding approaches of Finer (1985); Broadwell (1997); Watanabe (2000); Weisser (2009) as well as the feature sharing approach of Camacho (2010) is that whether a morpheme is a same subject marker or a different subject marker is not settled at the beginning but is an outcome of morphological realization after syntax has manipulated features and feature values (see also Georgi (this volume), Keine (this volume)) for analyses where same and different subject marking is not fixed from the beginning).

Finally, the binding approach is clearly representational in nature, since it involves the representational binding principles A and B.

(41) *Binding Principles* (Chomsky, 1981, 188)

A. An anaphor is bound in its governing category.
B. A pronominal is free in its governing category.

The agreement approach developed here is, however, entirely derivational since it does not rely on representational constraints such as binding principles. Thus, the interclausal agreement approach is in line with the tenet of reducing the representational residue in derivational theories (cf. Brody 2001).

So far, the question of phases has been ignored. Note, however, that in principle, the agreement approach presented here is compatible with various versions of phase-based derivation (see e.g. Chomsky 2001; Richards 2011; Müller 2010 and references cited therein). Since in the analysis of Quechua, every head moves up to the next phase head, the heads will always be at the edge of the respective phase and their features will be accessible to operations outside the phase. Thus, the interclausal agreement approach is fully compatible with a minimalist derivational syntax.

A possible flaw in the interclausal agreement analysis might be that it is based upon referential indices in the syntax. This may be seen as a step backwards in

syntactic theory as the minimalist program tries to eliminate syntactic indices in narrow syntax and considers them to be a purely semantic object. In fact, theories have been proposed where switch-reference is analyzed without invoking referentiality. However, as I will argue below, theories which do not make use of indices, encounter difficulties with deriving canonical different subject marking.

4.2. Comparison with respect to empirical adequacy

Here I would like to summarize three different accounts of switch-reference that do not make use of referential indices.

Georgi (2012) assumes that in same subject contexts there is only one DP that is merged as the subject of the subordinated clause and then moves to the position of the subject of the superordinated clause. In different subject contexts there are two DPs which are merged in the two subject positions.

Keine (this volume) proposes that in switch-reference contexts, clauses are coordinated. In same subject contexts, low coordination of VPs excluding the subject applies, so that only one subject is present in the structure, while in different subject contexts high coordination of vPs applies with two subjects being present in the structure.

Finally, Camacho (2010) assumes that the clause bearing switch-reference morphology has an empty pronominal as its subject which is ϕ-defective and cannot value the ϕ-features on T. Camacho then proposes that the T of a same subject clause has a valency feature which must be valued via Agree with the superordinated clause. Since he assumes feature sharing (Pesetsky and Torrego 2007), the valency Agree relation establishes a link between the subject of the superordinated clause and the subordinated clause. In other words, the subject of the superordinated clause is identified as the subject of the subordinated clause. In different subject contexts, however, no such interclausal dependency is established, and two different subjects are present.

What these three approaches have in common is that a dependency between two clauses is only established in same subject contexts, while different subject contexts exhibit no dependency between the clauses. This, however, means that it cannot be guaranteed if the subjects in different subject contexts are truly different, and additional stipulations are necessary in order to rule out accidental identity.

Keine (this volume), e.g., rules out accidental identity of subjects in different subject contexts by the principle of *Economy of Coordinate Structures* in (42) (cf. also Chomsky 1995; Rizzi 1997; Bresnan 2001; Grimshaw 1997, 2001, 2008 among others).

(42) *Economy of Coordinate Structures*
Given semantic equivalence, minimize structure.

Since vP and VP coordination are semantically equivalent if both subjects are identical, only VP coordination may be used. Note, however, that this constraint is at least translocal (maybe even transderivational), i.e., it involves a comparison of possible structures that go back to the same input numeration. Since such constraints increase the complexity of syntactic computation immensely, they are not desireable and should be dispensed with, if possible.

It should be noted that there are in fact languages which have non-canonical different subject marking, i.e., the different subject marker is used even though the subjects are identical, e.g. Seri (cf. Moser 1978; Marlett 1981, 1984*a*,*b*, 2010; Farrell et al. 1991), Amele (cf. Roberts 1987, 1988*a*,*b*, 1990, 1997, 2001), Eastern Pomo (cf. McLendon 1975, 1978) or Lenakel (cf. Lynch 1983). Nevertheless, canonical different subject marking as can be observed in Quechua, does not follow directly from such accounts and needs additional assumptions. Canonical different subject marking, however, follows directly within the agreement approach developed here. Note that the main idea of the interclausal agreement analysis can be maintained in order to derive unexpected switch-reference marking. Presupposing that an Agree relation between two clauses can be established in any case, the constitution of probes decides whether Agree can be established (SS marking) or not (DS marking). Even though I do not claim that the agreement account is suited for all switch-reference systems—in fact, it rather seems to me that switch-reference is a term covering syntactically distinct phenomena—it is in principle possible to adapt the agreement analysis to other languages and derive unexpected switch-reference marking without altering the main assumptions.

Furthermore, one main advantage of the interclausal agreement analysis is that it is able to derive the language-specific properties of the Quechuan switch-reference system, viz., that the switch-reference marker behaves morpho-syntactically like a tense marker and is not compatible with neither verbal person agreement markers nor case markers.

To sum up the discussion of this section, I have argued that the interclausal agreement approach to switch-reference in Quechua has several advantages over other accounts of switch-reference. On the one hand, the analysis is completely local and derivational in nature, which makes it more compatible with a local derivational framework than Finer's (1985) binding approach. (It seems to me that for reasons of complexity, it is also more attractive than Keine's (this volume) account, which relies on a translocal economy constraint.) Furthermore, I have argued that, at least with respect to Quechua, the interclausal agreement analysis can capture the data in a more elegant way, without invoking additional assumptions.

5. Conclusion

In this paper, I have developed an approach to switch-reference in Quechua, which analyzes switch-reference as an instance of the morpho-syntactic category tense. Adverbial clauses in Quechua might enter the derivation without a valued tense feature and must receive a value by Agree with the head of its superordinated clause. Due to assumptions about Agree, which are needed for deriving completely independent phenomena (cf. Richards 2008; Assmann 2010), tense Agree may only apply if the subjects of the adverbial and its superordinated clause are identical. The complementary distribution of tense and switch-reference markers can now be derived by sensitizing vocabulary insertion rules to whether feature values have been obtained by Agree or not. Tense markers are used if the tense features were valued from the start. The same subject marker is used if Agree has applied and the different subject marker is used if Agree has failed.

This agreement analysis of switch-reference in Quechua is not only attractive on empirical grounds since it captures the major facts about Quechuan switch-reference without further ado, but it is also compelling in light of the discussion of elegant syntactic theory (cf. Brody 2001). The agreement analysis does not make use of representational or transderivational devices and constraints and can, thus, be considered to be in line with conceptual tenets of local derivational frameworks. An interesting question, which arises given the discussion in this paper, is whether switch-reference should be analyzed cross-linguistically alike, or whether it is an epiphenomenon from a theoretical perspective, which results from other (perhaps even different) syntactic phenomena. At least for Quechua, I have argued that switch-reference can best be analyzed not as a proper morpho-syntactic category.

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1. Appendix: Abbreviations

1	–	1st person
2	–	2nd person
3	–	3rd person
ABL	–	ablative
ACC	–	accusative
DS	–	different subject
FUT	–	future
GEN	–	genitive
INSTR	–	instrumental
LOC	–	locative
NOM	–	nominative
NMLZ	–	nominalizer
OBJ	–	object
PL	–	plural
PST	–	past
RPST	–	recent past
SEM	–	semantic case
SG	–	singular
SS	–	same subject

Schaltreferenz im Deutschen

Katja Barnickel & Andreas Opitz*

Abstract

This paper provides evidence that the phenomenon of switch-reference (SR) arises in Standard German although it does not show typical verbal SR-markers. Data from a corpus-based study show that in German there is the trend to mark SR by syntactic variation, namely by linearization of the matrix-clause and the subordinate clause, which as such is considered to be relatively free. The data show that a subordinate clause prefers to precede its matrix-clause when subjects are not coreferent (DS), but that it prefers to follow its matrix-clause when subjects are coreferent (SS). Therefore, we argue that in German anaphoric sentences are the non-grammaticalized instrument to mark subject co-reference and that the general dispreference for cataphoric sentences is due to the tendency that their structure is reserved for having different subjects.

1. Einleitung

Unter Schaltreferenz versteht man das Vorhandensein eines verbalen Markers, der anzeigt, ob das Subjekt eines Satzes mit dem Subjekt eines adjazenten Satzes, welcher sich innerhalb derselben syntaktischen Struktur befindet, koreferent ist. Vorliegende Koreferenz wird durch einen Same-Subject-Marker (SS) angezeigt, während unterschiedliche Subjektreferenz mit Hilfe eines Different-Subject-Markers (DS) ausgedrückt wird, wie es in (1) zu sehen ist.

(1) *Mojave (Munro, 1979, 145)*

a. nya-isvar-k iima-k
when-sing-SS dance-Tns
'Als er$_i$ sang, tanzte er$_i$'

b. nya-isvar-m iima-k
when-sing-DS dance-Tns
'Als er$_j$ sang, tanzte er$_i$.'

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Das Phänomen der Schaltreferenz wurde zuerst von Jacobsen (1967) beschrieben und findet sich hauptsächlich in den Sprachen Nordamerikas und Papuas. Vereinzelt beobachtbar ist es auch in Südamerika, dem Kaukasus und in Ostasien, es scheint sich jedoch ausschließlich auf OV-Sprachen zu beschränken. Wie Beispiel (1) illustriert, treten die SS/DS-Marker stets am Verb des abhängigen Satzes auf und unterscheiden sich sichtbar morphologisch.[1] Obwohl indoeuropäische Sprachen nicht zu den Sprachen gehören, in denen morphologisch markierte Schaltreferenz typischerweise beobachtbar ist, gab es bereits erfolgreiche Bestrebungen, eine Kodierung von SS- und DS-Kontexten auch in ihnen nachzuweisen. Dass die Kodierung von Schaltreferenz in indoeuropäischen Sprachen nicht zwingend morphologisch erfolgen muss, sondern auch syntaktischer Natur sein kann, wird am Beispiel des Lateinischen deutlich, in welchem der Ablativ in Ablativ-Absolut-Konstruktionen DS-Kontexte anzeigt, so wie es in (2) zu sehen ist.

(2) *Latein (Haiman (1983))*

a. Aristides$_i$ [$_{CP}$ pro$_i$ patria pulsus] Lacedaemonium fugit.
'Seines Heimatlandes verwiesen, floh Aristides nach Lakedaimon.' (SS)

b. [$_{CP}$ Aristide$_i$ patria pulso] Persae$_j$ Graecos agressi sunt.
'Als Aristides seines Heimatlandes verwiesen wurde, griffen die Persier die Griechen an.' (DS)

Im Standarddeutschen hingegen scheint es das Phänomen der Schaltreferenz in einer grammatikalisierten Form nicht zu geben, was bedeutet, dass ein Referenzwechsel in einem subordinierten Satz nicht obligatorisch angezeigt werden muss.[2] Die Beobachtung im Lateinischen, dass Ablativkonstruktionen als SS/DS-Markierungen dienen, liefert jedoch den wertvollen Hinweis, dass innerhalb indoeuropäischer Sprachen nicht ausschließlich morphologische Markierungen in Frage kommen, um SS/DS-Kontexte kenntlich zu machen, sondern durchaus auch syntaktische. Von dieser Beobachtung ausgehend möchten wir in vorliegender Arbeit zeigen, dass das Deutsche, obwohl es einen Referenzwechsel offensichtlich nicht durch verbale Marker realisiert, andere strukturelle Variationen aufweist, in

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[1] Für Ableitungen von Schaltreferenz mit Hilfe der Bindungstheorie siehe Finer (1985) und Watanabe (2000), auf Basis einer Kongruenzrelation siehe Camacho (2010) und Assmann (dieser Band), für eine Analyse als Koordinationsstruktur Keine (dieser Band) und für eine Analyse als Bewegung Georgi (dieser Band) .

[2] Es gibt Annahmen, dass Schaltreferenz nicht nur subordinierte Sätze betrifft, sondern auch im Kontext koordinierter Sätze auftritt, siehe hierzu Weisser (dieser Band), oder dass es sich dabei sogar ausschließlich um koordinierte Strukturen handelt, vgl. Keine (dieser Band) . Was das Deutsche betrifft, wird es im Folgenden ausschließlich um subordinierte Sätze gehen.

denen sich Schaltreferenz manifestiert, nämlich die Abfolge von Matrixsatz und subordiniertem Satz. Im Deutschen kann ein subordinierter Satz (CP_{sub}) seinem Matrixsatz (CP_{mtx}) folgen, so wie in (3a, b) oder er kann ihm vorangehen, dargestellt in (3c, d).

(3) a. [$_{CPmtx}$ Der Mann$_i$ sah die Frau,] [$_{CPsub}$ als er$_i$ sich umdrehte].
b. [$_{CPmtx}$ Der Mann sah die Frau$_i$,] [$_{CPsub}$ als sie$_i$ sich umdrehte].
c. [$_{CPsub}$ Als er$_i$ sich umdrehte,] [$_{CPmtx}$ sah der Mann$_i$ die Frau].
d. [$_{CPsub}$ Als sie$_i$ sich umdrehte,] [$_{CPmtx}$ sah der Mann die Frau$_i$].

Die Subjekte in (3a, c) sind koreferent, wobei in (3a) anaphorische Referenz besteht und in (3c) kataphorische. In (3b, d) hingegen stehen die Subjekte in keiner Koreferenzbeziehung. Im Folgenden werden wir anhand von Ergebnissen einer Korpusuntersuchung zeigen, dass das Deutsche die Tendenz aufweist, Schaltreferenz durch die Abfolge von subordiniertem Satz und Matrixsatz anzuzeigen. Besteht zwischen den beiden vorliegenden Subjekten Koreferenz (sowie in 3a, c), so folgt der subordinierte Satz tendenziell lieber seinem Matrixsatz. Besteht keine Koreferenz (so wie in 3b, d), geht der subordinierte Satz seinem Matrixsatz tendenziell eher voran. Demzufolge behaupten wir, dass die Voranstellung des subordinierten Satzes einer (nicht obligatorischen) DS-Markierung entspricht, während seine Nachstellung einer SS-Markierung gleichkommt. Die Ergebnisse der Korpusuntersuchung, auf denen diese Annahme basiert, werden in Abschnitt 2 vorgestellt und in Abschnitt 3 diskutiert. Abschnitt 4 verweist zunächst auf eine bisherige Implementierung ähnlicher statistischer Tendenzen innerhalb des Frameworks der stochastischen Optimalitätstheorie. Abschließend zeigen wir, wie sich die im Deutschen beobachtbare Tendenz, Schaltreferenz durch die Abfolge von subordiniertem Satz und Matrixsatz anzuzeigen, mit Hilfe der stochastischen OT modellieren lässt.

2. Untersuchung

2.1. Methode

Mit Hilfe des Korpusrecherchesystems COSMAS II wurden insgesamt 300 Sätze aus den öffentlichen Korpora des IDS Mannheim auf Koreferenz ihrer jeweiligen Subjekte untersucht. Es wurden lediglich einfach eingebettete Sätze berücksichtigt, das heißt, alle Sätze bestanden aus einer Matrix-CP und einer subordinierten CP und hatten somit entweder die Struktur [[$_{CPsub}$ KONJUNKTION PRONOMEN ....,] [$_{CPmtx}$ ... Antezedens/Nicht-Antezedens...]] oder [[$_{CPmtx}$

...Antezedens/Nicht-Antezedens,] [$_{CPsub}$ KONJUNKTION PRONOMEN ....]].[3] Konjunktionen und Pronomen wurden folgendermaßen variiert: WÄHREND + ER, WÄHREND + SIE, ALS + ER, ALS + SIE. Pro Kombination wurden 75 Sätze zufällig aus dem Korpusarchiv ausgewählt. Die Beispiele (4)-(7) illustrieren diese Kombinationen mit jeweils beiden möglichen Satzabfolgen anhand aus dem Korpus entnommener Daten.

(4) WÄHREND + ER

a. [**Während er** noch drei Löcher flickt], [bringt **ein Bote** bereits Ersatzteile.]

b. [Sekunden später bricht **ein Blitzlichtgewitter** über ihn herein], [**während er** von seinen Mitspielern fast erdrückt wird.]

(5) WÄHREND + SIE

a. [**Während sie** rührt], [telefoniere **ich** im Wohnzimmer weiter.]

b. [**Seine Familie** wurde ausgeraubt], [**während sie** beim Traueramt war.]

(6) ALS + ER

a. [**Als er** das Haus verließ], [fuhr **die Polizei** auf.]

b. [**Michael** war nicht gerade enthusiastisch], [**als er** das Auto zum ersten mal fuhr.]

(7) ALS + SIE

a. [**Als sie** später in die Küche ging], [stand ihr nach Medienberichten von gestern **ein fremder Mann** gegenüber.]

b. [**Einer der drei** habe sie geboxt und getreten], [**als sie** zu Boden gefallen sei.]

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[3] Um die Datenlage möglichst übersichtlich zu halten, wurden mehrfach eingebettete finite Sätze, die ein zusätzliches Subjekt einführen, nicht in die Untersuchung miteingeschlossen (z.B ***Der UN-Beauftragte für Afghanistan*** *kritisierte jetzt, dass* ***die EU*** *nach Afghansistan nur 200 Polizeiausbilder entsenden will,* ***während sie*** *im Kosovo 5000 Ausbilder einsetze.*) Die umgekehrte Abfolge *Der UN-Beauftrage für Afghanistan kritisierte jetzt, dass, während sie im Kosovo 5000 Ausbilder einsetze, die EU nach Afghanistan nur 200 Polizeiausbilder entsenden will*, ist zwar prinzipiell möglich, jedoch ist die Wahrscheinlichkeit hoch, dass andere Faktoren für die mögliche Dispräferenz verantwortlich sind (z.B. Vermeidung *dass* und *während* nebeneinander zu platzieren). Konsequenterweise wurden auch Sätze mit wörtlicher Rede von der Analyse ausgeschlossen (*"Bei manchen fehlt allerdings noch die Routine", sagt sie, während sie ihre beiden drei und sechs Jahre alten Kinder ins Auto setzt*). Infinite eingebettete Sätze wurden hingegen mit in die Analyse aufgenommen: (***Judith Schuhmacher*** *liebt es, ihre Gedanken auf Spazierfahrt zu schicken,* ***während sie*** *zu Hause in Bad Neuenahr ihrer vierjährigen Tochter beim Spielen zuschaut oder Wäsche bügelt.*).

2.2. Ergebnisse

Von insgesamt 300 erhobenen Datensätzen wurden zwei aufgrund uneindeutiger Referenz von der Analyse ausgeschlossen.[4] Über die verbleibenden 298 gültigen Datensätze wurden statistische Analysen (Chi-Quadrat-Test) für die Faktoren Referenz (identisch / nicht-identisch) sowie Position des subordinierten Satzes (dem Matrixsatz vorangehend / dem Matrixsatz nachfolgend) durchgeführt. Aus Tabelle 1 lässt sich entnehmen, dass im Deutschen SS-Kontexte (insgesamt 181 Daten) häufiger vorkommen als DS-Kontexte (insgesamt 117 Daten). Desweiteren tritt die Abfolge CP_{mtx} - CP_{sub} (insgesamt 163 Daten) häufiger auf als die Abfolge CP_{sub} - CP_{mtx} (insgesamt 135 Daten). Das heißt, prinzipiell folgen subordinierte Sätze im Deutschen ihrem Matrixsatz lieber, als dass sie ihm vorangehen. Trotz dieser allgemeinen Präferenzen gibt es jedoch einen hochsignifikanten Zusammenhang zwischen Satzabfolge und Referenzidentität. Der Anteil identischer Referenz unterschied sich für die beiden Abfolgemöglichkeiten: $\chi^2(1, N = 298) = 27{,}47$, $p < 0{,}001$. Somit kann eine zufällige Verteilung von Referenzidentität und Satzabfolge ausgeschlossen werden. Vielmehr ergibt sich folgendes Bild: DS-Kontexte (keine Koreferenz zwischen den Subjekten), präferieren eindeutig die Abfolge CP_{sub} - CP_{mtx}, also den subordinierten Satz vor dem Matrixsatz stehend. Für SS-Kontexte hingegen (koreferente Subjekte), gilt, dass der subordinierte Satz seinem Matrixsatz lieber folgt (CP_{mtx} - CP_{sub}). Dieses Ergebnis ist in Tabelle 1 zusammengefasst und in Graphik 1 anhand eines Balkendiagramms veranschaulicht.

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[4]Weder eine isolierte Betrachtung des Datums, noch eine Betrachtung des vorangehenden Kontextes ließen eine eindeutige Aussage darüber zu, ob das vorliegende Pronomen auf das Subjekt oder das Objekt des Matrixsatzes referiert: ***Die 19-jährige*** *habe* ***sie*** *nicht entkommen lassen, während* ***sie*** *den "Todeskampf ihres Ehemannes" habe mitansehen müssen.* Zwar ist die Interpretation der Objekt-Koreferenz vielleicht die naheliegendere, jedoch kann eine bestehende Subjekt-Koreferenz mit *die 19-jährige* nicht hundertprozentig ausgeschlossen werden. Im zweiten Fall entstehen durch den vorangehenden Kontext hingegen zwei Interpretationsmöglichkeiten: *Wie selbstverständlich schnappt sich* ***der Kunde*** *die 30 Jahre alte Gitarre, die da an der Wand lehnt.* ***Während er*** *Akkorde schrammelt, stimmt Ricky Shayne "House of the rising sun" an.* Auch aus noch weiter vorangehendem Kontext geht nicht hervor, ob *der Kunde* und *Ricky Shayne* ein und dieselbe Person sind, was die Referenz von er eindeutig machen würde.

		Position		gesamt
		vor CP_{mtx}	nach CP_{mtx}	
Referenz	**DS**	75	42	**117**
	SS	60	121	**181**
gesamt		**135**	**163**	**298**

Tabelle 1: Kreuztabelle der Verteilung von Referenzidentität und Satzabfolge im gesamten Sample ($\chi^2(1, N = 298) = 27.47, p < 0.001$)

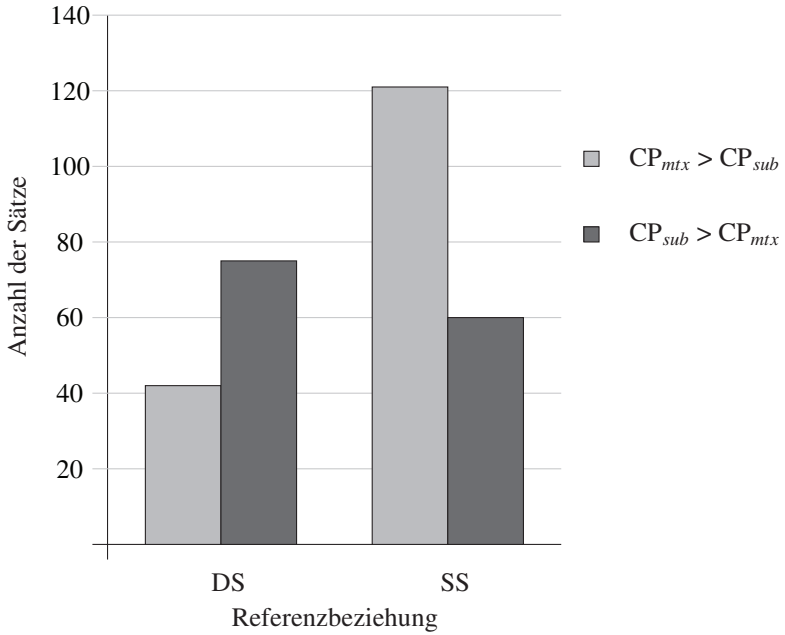

Abbildung 1: Gesamtverteilung

Desweiteren wurde ermittelt, dass sich während-Sätze und als-Sätze unterschiedlich verhalten. Die Analyse zeigt, dass sich während und als hinsichtlich ihrer allgemeinen Präferenz bezüglich der Stellung des subordinierten Satzes, in dem sie vorkommen, unterscheiden ($\chi^2(1, N = 298) = 13{,}78, p < 0{,}001$). Während

präferiert die Abfolge CP_{sub} - CP_{mtx}, als hingegen die Abfolge CP_{mtx} - CP_{sub}, wie es in Tab. 2 zu sehen ist.

		Position		**gesamt**
		vor CP_{mtx}	nach CP_{mtx}	
Subjunktion	***als***	52	98	**150**
	während	83	65	**148**
gesamt		**135**	**163**	**298**

Tabelle 2: Kreuztabelle der Verteilung von *als* und *während* in den verschiedenen Satzabfolgen (Position) ($\chi^2(1, N = 298) = 13.78, p < 0.001$)

Die beiden Subjunktionen unterschieden sich ebenfalls hinsichtlich ihres Auftretens mit identischer (SS) oder nicht-identischer Referenz (DS) ($\chi^2(1, N = 298) = 7{,}96, p < 0{,}01$) und zwar der Art, dass *als* verstärkt in SS-Kontexten auftaucht (siehe Tabelle 3).

		Referenz		**gesamt**
		DS	SS	
Subjunktion	***als***	47	103	**150**
	während	70	78	**148**
gesamt		**117**	**181**	**298**

Tabelle 3: Kreuztabelle der Verteilung von *als* und *während* in den verschiedenen Referenzarten (Referenz) (($\chi^2(1, N = 298) = 7.96, p < 0.01$)

Trotz dieser unterschiedlichen Präferenzen galt für beide Subjunktionen einzeln, dass die Position des subordinierten Satzes und die vorliegende Referenzidentität voneinander abhängen. In DS-Kontexten finden sich sowohl in *während*-, als auch in *als*-Sätzen mehr vorangestellte subordinierte Sätze (vgl. Tabelle 4), in SS-Kontexten hingegen mehr nachgestellte (vgl. Tabelle 5).

"während"		**Position**		**gesamt**
		vor CP_{mtx}	nach CP_{mtx}	
Referenz	**DS**	48	22	**70**
	SS	35	43	**78**
gesamt		**83**	**65**	**148**

Tabelle 4: Kreuztabelle der Verteilung von *während* in den verschiedenen Referenzarten (Referenz) und Nebensatzpositionen (Position) ($\chi^2(1, N = 148) = 8.41, p < 0.01$)

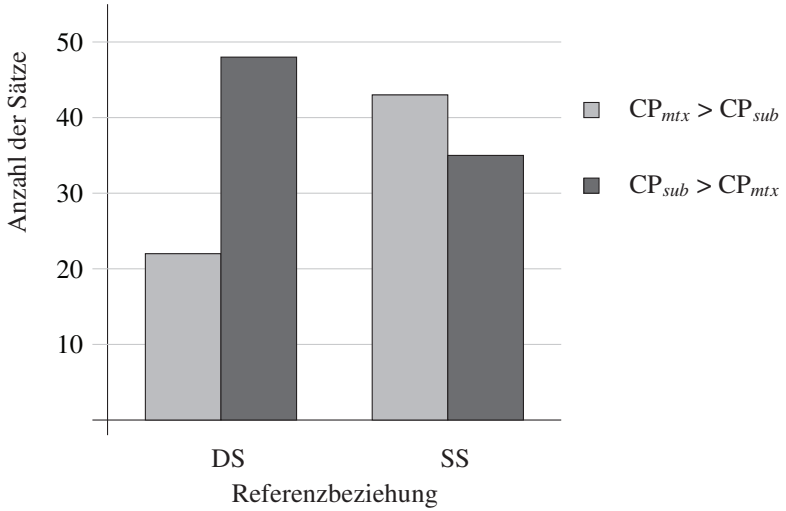

Abbildung 2: Verteilung für *während*

"als"		**Position**		**gesamt**
		vor CP_{mtx}	nach CP_{mtx}	
Referenz	**DS**	27	20	**47**
	SS	25	78	**103**
gesamt		**52**	**98**	**150**

Tabelle 5: Kreuztabelle der Verteilung von *als* in den verschiedenen Referenzarten (Referenz) und Nebensatzpositionen (Position) ($\chi^2(1, N = 150) = 15.68, p < 0.001$)

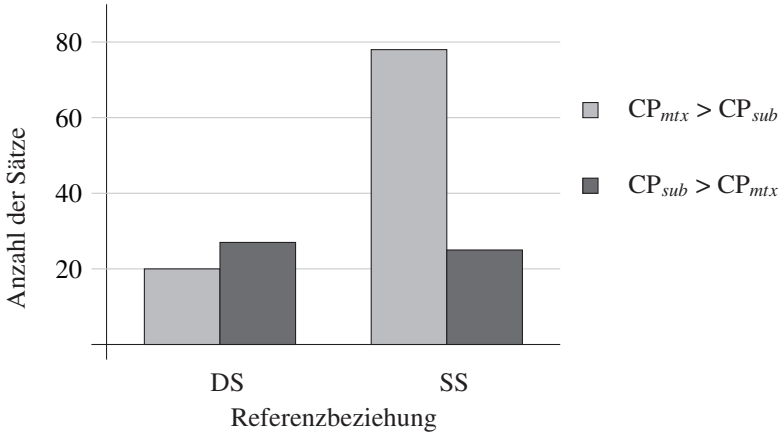

Abbildung 3: Verteilung für *als*

Keine signifikanten Unterschiede fanden sich bezüglich der beiden untersuchten Pronomen (sie/er). Weder *er* noch *sie* präferiert eine der Satzabfolgen CPmtx - CPsub/CPsub - CPmtx ($\chi^2(1, N = 298) = 0{,}34$, p=0,56), noch eine der Referenzbeziehungen SS/DS ($\chi^2(1, N = 298) = 0{,}35$, p=0,55).

3. Diskussion

3.1. Verhalten von *während* und *als*

Die Ergebnisse der vorliegenden Korpusuntersuchung zeigen, dass im Falle identischer Referenz der Subjekte (SS) in Matrixsatz und subordiniertem Satz der subordinierte Satz seinem Matrixsatz tendenziell lieber folgt, während bei nichtidentischer Referenz der beiden Subjekte (DS), der subordinierte Satz seinem Matrixsatz tendenziell eher vorangeht. Dies gilt sowohl für subordinierte Sätze eingeleitet mit *während*, als auch für solche eingeleitet mit *als*, obwohl die beiden Subjunktionen prinzipiell unterschiedliche Abfolgen präferieren. Subordinierte Sätze mit *während* stehen tendenziell lieber vor ihrem Matrixsatz. Dies könnte damit zusammenhängen, dass *während* neben seiner temporalen Verwendung häufig auch adversativ gebraucht wird (vgl. Bsp. (8)).[5]

(8) a. *Temporale Verwendung*
Während sie kocht, läuft das Radio in der Küche.
b. *Adversative Verwendung*
Während sie früher joggte, gilt ihre Leidenschaft heute dem Radfahren.

Das Ausdrücken eines Gegensatzes geht meist mit der Verschiedenheit der Subjekte, über die eine Aussage getroffen wird, einher. Die Beobachtung, dass subordinierte Sätze mit *während* also lieber vor ihrem Matrixsatz stehen, ist unter der Annahme, dass vorangestellte subordinierte Sätze DS-Kontexte signalisieren, insofern nicht verwunderlich, als dass *während*-Sätze prädestiniert sind, Gegensätzlichkeit auszudrücken. Trotz dieser allgemeinen Präferenz für die Voranstellung zeigen subordinierte Sätze mit *während*, sobald sie innerhalb eines SS-Kontextes vorkommen, die Tendenz ihrem Matrixsatz zu folgen. Genauso bemerkenswert ist die Tatsache, dass, obwohl subordinierte Sätze mit *als*, betrachtet man lediglich den Faktor "Position", ihrem Matrixsatz tendenziell lieber folgen, sie ihr präferiertes Muster unter dem Faktor DS ebenfalls aufgeben und die Tendenz zeigen, lieber vor dem Matrixsatz zu stehen. Dass *er* und *sie* hingegen wie erwartet keinerlei Präferenz für eine bestimmte Struktur aufweisen, zeigt, dass der Zusammenhang zwischen Satzabfolge und Referenzidentität nicht auf das Vorhandensein eines bestimmten Pronomens zurückzuführen ist.

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[5] In manchen Fällen ist es jedoch kaum möglich, klar zwischen temporaler und adversativer Verwendung zu trennen, wie z.B. in folgendem Satz: *Während er eine Flasche nach der anderen leerte, nippte sie an ihrem Glas (DUDEN Grammatik 2009:629).*

3.2. Dispräferierte SR-Markierung

Wie sich gezeigt hat, richtet sich die Abfolge von subordiniertem Satz und Matrixsatz tendenziell nach der Referenzbeziehung der jeweiligen Subjekte, wobei SS-Kontexte die Abfolge CP_{mtx} - CP_{sub} präferieren, und DS-Kontexte die umgekehrte Abfolge CP_{sub} - CP_{mtx}, zusammengefasst in (9) und (10).

(9) SS-Kontexte:

a. präferiert: [$_{CPmtx}$ Der Mann$_i$ sah die Frau,] [$_{CPsub}$ als er$_i$ sich umdrehte].

b. dispräferiert: [$_{CPsub}$ Als er$_i$ sich umdrehte,] [$_{CPmtx}$ sah der Mann$_i$ die Frau].

(10) DS-Kontexte:

a. dispräferiert: [$_{CPmtx}$ Der Mann sah die Frau$_i$,] [$_{CPsub}$ als sie$_i$ sich umdrehte].

b. präferiert: [$_{CPsub}$ Als sie$_i$ sich umdrehte,] [$_{CPmtx}$ sah der Mann die Frau$_i$].

Die allgemeine Dispräferenz für Kataphorizität (vgl. (9b)) gegenüber Anaphorizität (vgl. (9a)) wird in der Literatur oft beschrieben. So heißt es zum Beispiel in Beaugrande & Dressler (1981): “Kataphora werden seltener als Anaphora verwendet und bereiten bei der kognitiven Verarbeitung in der Rezeption größere Schwierigkeiten, erhöhen jedoch die Wirksamkeit von Texten. Durch Kataphora wird bei größerer Verarbeitungsschwierigkeit eine stärkere Verarbeitungstiefe erreicht als durch Anaphora” (de Beaugrande and Dressler, 1981, 65f). Verarbeitungsschwierigkeiten könnten sich aus dem Verstoß gegen die in SS-Kontexten normalerweise präferierte anaphorische Abfolge ergeben, da eine Voranstellung des subordinierten Satzes eigentlich einen Referenzwechsel ankündigt, der dann aber nicht erfolgt. Es könnte also sein, dass sich Sprecher, wenn sie kataphorische Sätze produzieren, folglich “bewusst” der präferierten Abfolge für DS-Kontexte bedienen, ohne jedoch einen Referenzwechsel zu intendieren, um eine höhere Verarbeitungstiefe zu provozieren und somit mehr Aufmerksamkeit ihres Hörers oder Lesers herbeizuführen. Umgekehrt sollte für DS-Kontexte gelten, dass die dispräferierte Abfolge, in welcher der subordinierte Satz seinem Matrixsatz folgt, mehr Verarbeitungsaufwand bedeutet, da sie nicht die erwartete Abfolge für einen Kontext ist, in dem die Subjektreferenz wechselt. Es steht aus, dies experimentell zu testen.[6]

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[6]Einen Hinweis, dass die Abfolge CPmtx - CPsub die unerwartete, also die markierte Abfolge für DS-Kontexte ist, liefert die Tatsache, dass Sprecher im subordinierten Satz einen Referenzwechsel

Dass es zweifelsfrei Faktoren gibt, die zu einer eigentlich unerwarteten SR-Markierung führen, also dass SS-Marker in DS-Kontexten und DS-Marker in SS-Kontexten auftreten, ist interessanterweise auch in SR-typischen Sprachen, in denen SR morphologisch markiert wird, nichts Ungewöhnliches. So weist Roberts (1988*a*) z.B. auf Sätze hin, die DS-markiert sind, trotz der Tatsache, dass sie koreferente Subjekte aufweisen.

(11) *Amele*

a. Eu 1977 jagel November na odo-**co**-b cul-ig-ø-en.
that 1977 month November in do-**DS**-3SG leave-1PL-3SG-REMP
'That was in Novemeber 1977 that he$_i$ did that and he$_i$ left it for us.'
(Roberts, 1988*a*, 61)

b. Age ceta gul-do-co-bil li bahim=na
3PL yam pull.up-3SG.DO-DS-3PL go(SS) floor=on
tac-ein.
fill.3PL.REMP
'They pulled up the yams and then they went and filled up the yam store.'
(Roberts, 1997, 187)

Die Beispiele in (11) zeigen, dass DS-Marker offensichtlich nicht nur benutzt werden, um einen Referenzwechsel anzuzeigen, sondern auch um Kontraste, die andere Aspekte des vorliegenden Diskurses betreffen, zu markieren wie z.B. "foregrounded versus backgrounded events, same-place-setting versus different-place setting, same-time-setting versus different-time-setting and same-world-setting versus different-world-setting" (Roberts, 1997, 190). So erklärt sich in (11a) das Auftreten des DS-Markers *co* trotz koreferenter Subjekte dahingehend, dass von unterschiedlichen Zeitpunkten die Rede ist, während in (11b) durch die *co*-Markierung am ersten Verb ein Ortswechsel betont wird. Noch allgemeiner formuliert tritt der DS-Marker im Amele also in SS-Kontexten auf, wenn es so etwas gibt wie "a surprise change" (Roberts (1988*b*)) oder "some unexpected turn in

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oft hervorheben, zum Beispiel, in dem sie statt eines Personalpronomens ein Demonstrativpronomen wählen, welches die Koreferenz mit dem Objekt statt mit der des Subjekts betont (i)a. Diese Hervorhebung scheint jedoch blockiert, wenn Koreferenz zwischen zwei Subjekten besteht und diese bereits durch die Satzabfolge CP_{mtx} - CP_{sub} markiert ist (i)b.

(i) a. *Betonung der Nicht-Koreferenz der Subjekte im dispräf. Fall für DS-Kontexte*
[$_{CPmtx}$ Der Mann sah die Frau,] [$_{CPsub}$ als diese sich umdrehte].

b. *Blockierte Betonung der Subjektkoreferenz im präf. Fall (SS-typischer Kontext)*
*[$_{CPmtx}$ Der Mann sah die Frau,] [$_{CPsub}$ als dieser sich umdrehte].

the narrated events" (Stirling (1993)) . Diese diskursbezogenen SR-Markierungen, die jegliche Form von Kontrast anzuzeigen vermögen, sind jedoch keine alleinige Besonderheit des Amele, sondern wurden in vielen weiteren Sprachen beobachtet, wie z.B. unter anderem im Yakunytjatjara (vgl. Goddard (1985)) und Pitjantjatjara (vgl. Bowe (1990)), im Dani (vgl. Bromley (1981)) sowie im Nankina (vgl. Spaulding (1988)).[7]

4. Modellierung von SR-Tendenzen im Deutschen mittels stochastischer OT

Schaltreferenz ist nicht das einzige Phänomen, das in manchen Sprachen grammatikalisiert ist und in anderen nicht, sich dort jedoch in Form von statistisch nachweisbaren Häufigkeitstendenzen widerspiegelt. Bresnan et al. (2001) führen in diesem Zusammenhang eine Interaktion zwischen Personenhierarchie (1st, 2nd > 3rd) und Diathese an, die z.B. im Lummi grammatikalisiert ist. Im Lummi darf die Person des Subjekts eines Satzes auf der Personenhierarchie nicht tiefer angesiedelt sein als die des Nicht-Subjekts, ein sogenannter Silverstein-Effekt (vgl. Hale (1973); Silverstein (1976); Aissen (1999)). Ist dies der Fall, muss eine obligatorische Passivierung erfolgen. Der Satz *Der Mann sieht mich* ist im Lummi also ungrammatisch und muss als *Ich werde von dem Mann gesehen* realisiert werden, ohne dass jedoch der normale informationsstrukturelle Auslöser von Passiv vorliegt. Ist die Personenhierarchie im Aktiv hingegen korrekt abgebildet, wie in *Ich sehe den Mann*, ist umgekehrt eine Passivierung zu *Der Mann wurde von mir gesehen* nicht möglich. Bresnan et al. (2001) haben in einer Korpusuntersuchung festgestellt, dass auch das Englische die Tendenz aufweist, der Person/Diathese-Interaktion zu folgen. Im Englischen werden also häufiger Passivsätze gebildet, die der Personenhierarchie entsprechen (*I was attacked by a man*) als solche, die sie verletzen (*Mary was attacked by me*). Wie Bresnan and Aissen (2002) feststellen, können "classical generative theories of formal grammar" nicht adäquat erklären, wie es sein kann, dass ein in einer Sprache grammatikalisiertes Phänomen in einer anderen als Tendenz vorkommt:

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[7]Dass es nicht-kanonische SR auch im umgekehrten Kontext gibt, also das Auftreten eines SS-Markers trotz distinkter Subjekte, zeigt ein weiteres Beispiel aus dem Amele.

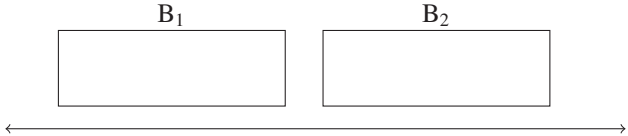
(i) Ija co-cob-ig wa hedo-i-a.
1SG SIM-walk-1SG.SS water finish-3SG-TODP
'As I walked along the rain stopped.' (Roberts, 1987, 300)

Für eine ausführliche Betrachtung von SR-Markierungen im Zusammenhang mit Wetterverben und impersonalen Konstruktionen allgemein sieheRoberts (1987, 2001).

> On these theories, frequentistic processes (such as the conventionalization of usage preferences) must belong either to grammar-external 'performance' along with speech errors and memory limitations, or to external choices among competing dialect grammars. Yet neither of these alternatives is an adequate model of variation and change, as first pointed out by Weinreich et al. (1968) (Bresnan and Aissen, 2002, 2).

Einen Rahmen, in dem sich das Auftreten von Tendenzen modellieren lässt, bietet die stochastische Optimalitätstheorie (vgl. Anttila (1997); Boersma and Hayes (2001); Hayes (2001)). Demnach sind Grammatikalisierungen von Mustern und ihr tendenzieller Gebrauch nicht zwei unterschiedliche Dinge, sondern lediglich Ausprägungen auf einer fortlaufenden Skala: "Stochastic OT grammars allow us to place the person/voice interactions in English and Lummi at points on a continuum of conventionalization that connects frequentistic preferences in usage to categorical grammatical constraints Bresnan et al. (2001)."[8]. Im Gegensatz zu einer klassischen OT-Analyse sind Beschränkungen also auf einer fortlaufenden Skala gerankt. Entscheidend ist der Abstand, den die jeweiligen Beschränkungen auf dieser Skala zueinander haben. Sind eine Beschränkung B_1 und B_2 angeordnet wie in (12), ist B_1 immer über B_2 gerankt und somit ist die von B_1 favorisierte Struktur in jedem Fall der Gewinnerkandidat. Das bedeutet, die Anwendung der von B_1 favorisierten Struktur ist grammatikalisiert.

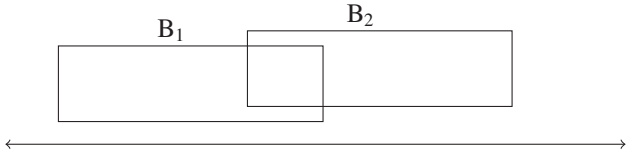
(12) Fixes Ranking der Beschränkungs-Domänen (Grammatikalisierung)



Gibt es hingegen eine Überlappung der Domänen von B_1 und B_2, so wie in (13), hängt das Ranking der Beschränkungen vom Evaluationszeitpunkt ab.

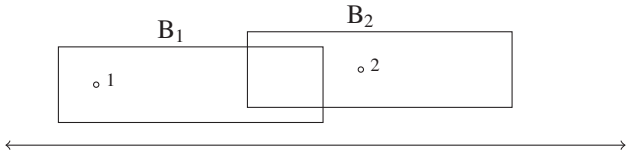
[8] Für eine ausführliche Darstellung der Analyse der Passiv/Diathese-Interaktion siehe (Bresnan et al. (2001))

(13) Überlappendes Ranking der Beschränkungs-Domänen (Optionalität)

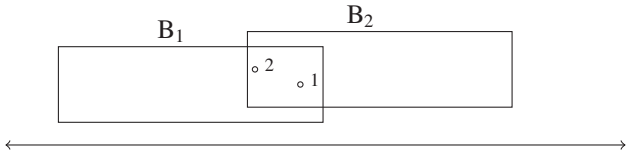


In der Evaluationszeit wird ein beliebiger Punkt innerhalb der Beschränkungs-Domänen ausgewählt (hier indiziert mit 1 und 2), an welchem die Output-Kandidaten evaluiert werden um einen Gewinner festzulegen. Diese Punkte können also nun außerhalb der sich überlappenden Domäne liegen, vgl. (14), oder innerhalb der gemeinsamen Domäne, vgl. (15).

(14) Normalfall: B_1 » B_2



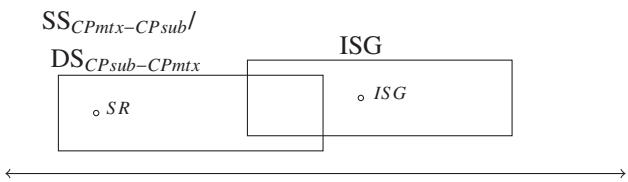
(15) Seltener Fall: B_2 » B_1



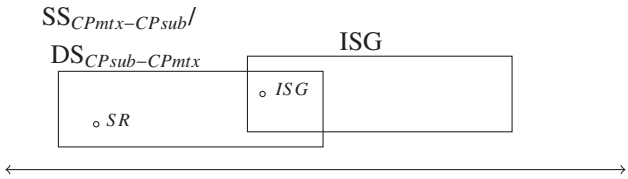
Je höher sich der jeweilige Evaluationspunkt innerhalb der Domäne von B_2 befindet und je niedriger er in der Domäne von B_1 angesiedelt ist, desto höher ist die Wahrscheinlichkeit, dass der Evaluationspunkt von B_2 nun über dem von B_1 steht, so wie in (15). Statistische Tendenzen ergeben sich also aus der Tatsache, dass der Gewinner von der Festlegung des Evaluationspunktes zu einer bestimmten Evaluationszeit abhängt. Die Konstellation so wie in (14), in der die beiden Punkte jeweils außerhalb der gemeinsamen Domäne liegen, führt demnach zum (statistisch häufigeren) Normalfall B_1 » B_2. Dies gilt genauso, wenn sich lediglich einer der Punkte außerhalb der gemeinsamen Domäne befindet. Sieht die Konstellation zum Evaluierungszeitpunkt jedoch aus wie in (15), was aufgrund der geringeren Größe der gemeinsamen Domäne statistisch seltener, jedoch möglich ist, gewinnt nun der von B_2 favorisierte Kandidat (B_2 » B_1). Mit Hilfe dieses Frameworks lässt sich nun auch die im Deutschen auftretende Tendenz, Schaltreferenz an-

hand der Abfolge von subordiniertem Satz und Matrixsatz zu markieren, modellieren. Für SS-Kontexte gilt die Beschränkung *Matrixsatz vor subordiniertem Satz* ($SS_{CPmtx-CPsub}$) und für DS-Kontexte die Beschränkung *subordinierter Satz vor Matrixsatz* ($DS_{CPsub-CPmtx}$). Wenn das jedoch alles wäre, dann würde es im Deutschen weder den Fall geben, dass ein subordinierter Satz seinem Matrixsatz in einem SS-Kontext vorangeht, noch dass ein subordinierter Satz seinem Matrixsatz in einem DS-Kontext folgt. Da diese Abfolgen jedoch definitiv vorkommen, gibt es auch gegenläufige, konkurrierende Beschränkungen. Eine jeweils konkurrierende Beschränkung ist so beschaffen, dass sie besagt: Stelle den subordinierten Satz aus anderen Gründen jeweils nach hinten/vorne, z.B. aus Gründen der Hervorhebung/Betonung, zugunsten des vorangehenden/nachfolgenden Kontextes oder wegen anderer diskursbezogener Faktoren, wie sie in Abschnitt 3.2 diskutiert wurden. Im Folgenden werden all diese Gründe zusammengefasst als informationsstrukturelle Gründe (ISG). Ordnet man diese Beschränkungen nun auf einer fortlaufenden Skala an, gibt es vier verschiedene Konstellationen. Man kann den Fall wie in (16) erhalten, in dem beide Evaluationspunkte (indiziert mit SR und ISG) zum Evaluationszeitpunkt jeweils außerhalb der gemeinsamen Domäne liegen oder den Fall in (17) wo sich lediglich einer der beiden Punkte außerhalb der gemeinsamen Domäne befindet.

(16) Fall 1: $SS_{CPmtx-CPsub}/DS_{CPsub-CPmtx}$ » ISG

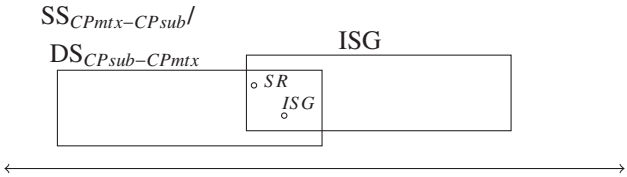


(17) Fall 2: $SS_{CPmtx-CPsub}/DS_{CPsub-CPmtx}$ » ISG



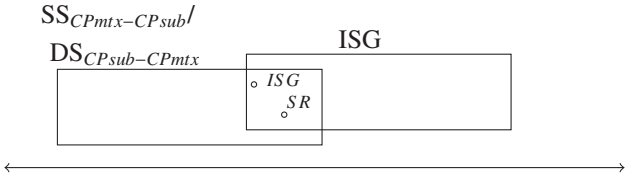
(18) zeigt den Fall, in dem sich beide Punkte jeweils innerhalb der gemeinsamen Domäne befinden. Punkt SR steht jedoch immer noch höher als Punkt ISG.

(18) Fall 3: $SS_{CPmtx-CPsub}/DS_{CPsub-CPmtx}$ » ISG



In (19) ist der letzte Fall dargestellt, in dem beide Punkte innerhalb der gemeinsamen Domäne liegen, wo nun aber Punkt ISG höher steht als Punkt SR.

(19) Fall 4: ISG » $SS_{CPmtx-CPsub}/DS_{CPsub-CPmtx}$



Verhalten sich die Evaluationspunkte wie in (16), (17) oder (18), bedeutet das, dass die Beschränkung $SS_{CPmtx-CPsub}/DS_{CPsub-CPmtx}$ jeweils höher gerankt ist als die relevante gegenläufige Beschränkung aus ISG. Somit ist der von der SR-Markierung favorisierte Kandidat der Gewinnerkandidat, was in (20) am Beispiel eines vorliegenden SS-Kontextes (20-a) und eines DS-Kontextes (20-b) illustriert ist.

(20) a. $SS_{CPmtx-CPsub}$ » ISG

	Kandidaten	$SS_{CPmtx-CPsub}$	ISG
	K_1: [Als er sich umdrehte,] [sah der Mann die Frau.]	*!	
☞	K_2: [Der Mann sah die Frau,] [als er sich umdrehte.]		*

b. $DS_{CPsub-CPmtx}$ » ISG

	Kandidaten	$DS_{CPsub-CPmtx}$	ISG
☞	K_1: [Als sie sich umdrehte,] [sah der Mann die Frau.]		*
	K_2: [Der Mann sah die Frau,] [als sie sich umdrehte.]	*!	

Liegt jedoch die seltenere, aber mögliche Konstellation in (19) vor, in der die Beschränkungsdomänen sich überlappen und der Evaluationspunkt von ISG höher steht als der von SR, ist die Beschränkung ISG plötzlich höher gerankt und der von SR dispräferierte Kandidat gewinnt, dargestellt in (21).

(21) a. ISG » $SS_{CPmtx-CPsub}$

	Kandidaten	ISG	$SS_{CPmtx-CPsub}$
☞	K_1: [Als er sich umdrehte,] [sah der Mann die Frau.]		*
	K_2: [Der Mann sah die Frau,] [als er sich umdrehte.]	*!	

b. ISG » $DS_{CPsub-CPmtx}$

	Kandidaten	$DS_{CPsub-CPmtx}$	ISG
	K_1: [Als sie sich umdrehte,] [sah der Mann die Frau.]	*!	
☞	K_2: [Der Mann sah die Frau,] [als sie sich umdrehte.]		*

Dass das Deutsche die Tendenz aufweist, SR anhand der Satzabfolge zu markieren, ergibt sich also daraus, dass es sich tendenziell so verhält, dass der von SR favorisierte Kandidat gewinnt. Trotzdem besteht die Möglichkeit, dass der aus ISG favorisierte Kandidat Gewinner wird, was erklärt, warum SR im Deutschen kein voll grammatikalisiertes Phänomen ist.
In diesem Abschnitt haben wir somit gezeigt, dass das Phänomen der grammatikalisierten Schaltreferenz, wie im Mojave, Amele oder Kiowa beobachtbar, und das des tendenziellen Auftretens wie im Deutschen sich in der stochastischen OT gleichermaßen modellieren lässt.

5. Abschließende Bemerkung

Unklar ist bisher, ob und wie die Stellung des subordinierten Satzes als SS/DS-Marker in einer merkmalsbasierten derivationellen Grammatik lokal modelliert werden kann (vgl. Chomsky (1995)). Alle uns bekannten Analysen (vgl. Fußnote 1) beziehen sich auf Sprachen, deren Satzabfolge entweder fix ist (z.B. auf von clause-chaining Gebrauch machende Papua-Sprachen wie Korafe oder Amele) und die daher eine Variation der Abfolge nicht als SR-Markierung nutzen, oder auf Sprachen, die zwar durchaus Variabilität der Stellung des SR-markierten Satzes

aufweisen (z.B. Kiowa, vgl. McKenzie (2007) oder Diyari, vgl. Austin (1981)), für die jedoch unseres Wissens in der Literatur noch nie beschrieben wurde, dass diese Variabilität an sich als Markierung für SR dient. Der Befund, dass SR offensichtlich nicht nur mit Hilfe morphologischer, sondern auch durch syntaktische Mittel angezeigt werden kann, ließe sich jedenfalls dahingehend erhärten, wenn sich neben dem Deutschen noch weitere (indoeuropäische) Sprachen mit freier Satzabfolge fänden, die ebenjene als Markierung von SS- und DS-Kontexten nutzten.

6. Zusammenfassung

Es wurde gezeigt, dass das Deutsche Schaltreferenz tendenziell in der Abfolge von subordiniertem Satz und Matrixsatz markiert. Das Nachstellen eines subordinierten Satzes, also das Erzeugen von Anaphorizität im engeren Sinne, ist somit nichts anderes als ein nicht obligatorischer SS-Marker, während das Voranstellen eines subordinierten Satzes als nicht obligatorischer DS-Marker fungiert. Die eindeutige Dispräferenz für Kataphorizität im Deutschen erklärt sich infolgedessen dahingehend, dass das Voranstellen eines subordinierten Satzes eigentlich DS-Kontexten vorbehalten ist. Abschließend wurde skizziert, wie ein sprachliches Phänomen wie das der Schaltreferenz, welches in manchen Sprachen grammatikalisiert ist und sich in anderen als statistische Präferenz widerspiegelt, sich mit Hilfe des stochastischen OT-Ansatzes modellieren lässt, ohne es als grammatikexternes Performanz-Phänomen analysieren zu müssen.

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Switch-Reference as Coordination

Stefan Keine*

Abstract

In this paper I argue for a major reassessment of switch reference phenomena, whereby a verb is marked morphologically for whether its subject is coreferent with the subject of another verb or not. While standardly conceived of as a system of reference tracking—directly or indirectly comparing the reference of two subjects—I claim that these markers do not encode reference relations at all. Rather, they are treated as the context-sensitive spell-out of a coordination head. The proposal builds on the standard assumption that the external argument is not introduced by the verb itself but by the functional head *v*. Coordination at the VP level does hence not include the external argument. If a single external argument is projected on top of the VP conjunction, a 'same subject' interpretation emerges by general semantic principles, with no reference comparison involved. *v*P coordination, by contrast, has no such entailment. Switch reference markers are argued to morphologically realize the coordination head in dependence on its structural environment (VP versus *v*P). The central evidence for my claim comes from so-called 'unexpected' switch reference marking, where a marker shows up in an environment that defies its characterization in terms of reference relations.

1. Introduction

The term 'Switch Reference' (SR) as generally used refers to the phenomenon that a verb bears a morpheme indicating whether the subject of this verb is referentially identical to or disjoint from the subject of another clause. In the former case, the marker is termed 'same subject' (SS) marker and the latter is designated as 'different subject' (DS), though other labels are occasionally found (such as

*This paper is an unmodified manuscript originally written in 2010. This volume being a selection of working papers, I have refrained from including subsequent changes and revisions the analysis has undergone in its subsequent development. These modifications, many of which are quite profound, are reflected in Keine (to appear), which therefore supersedes the present paper. For helpful discussion I am grateful to Anke Assmann, Doreen Georgi, Gereon Müller, and Philipp Weisser. Portions of this work have been presented at GLOW 33 (Wrocław, 2010), the Colloquium on Generative Grammar (Barcelona, 2010), the University of Leipzig, the University of Massachusetts at Amherst, and at MIT. I thank the audiences for their questions and comments. The research reported here was supported by a DFG grant to the project 'Argument Encoding in Morphology and Syntax', as part of Forschergruppe 742. All errors are my own.

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'proximative' versus 'obviative' in Ken Hale's terminology). Since its initial description by Jacobsen (1967) and the very influential work of Finer (1984, 1985) these markers are often taken to directly encode the reference relations between two subjects. While there exist several analyses of switch reference from a variety of theoretical perspectives in terms of binding (Finer, 1984, 1985; Nichols, 2000; Watanabe, 2000; Déchaine and Wiltschko, 2002; Pittman, 2005), Control (Borer, 1989), obviation in subjunctive mood (Avrutin and Babyonyshev, 1997), and discourse representation theory (Stirling, 1993), what most proposals have in common is that they accept the viability of the generalization above that these markers code reference relations. Starting from this common basis, they diverge as to the theoretical machinery they suggest for implementing the above generalization.

At first glance, this view is warranted. Consider the data from Zuni (an language isolate spoken in New Mexico) in (1), which illustrate the canonical view on SR.

(1) Zuni

a. ho' k^{w}ayi-nan yak'o-nna
1SG.NOM exit-SS vomit-FUT
'I will go out and throw up; When I go out, I'll throw up.'

b. ho' k^{w}ayi-p Nemme' yak'o-nna
1SG.NOM exit-DS Nemme vomit-FUT
'I will go out and Nemme will throw up.' [Nichols 2000, 6]

In (1-a) the first verb is marked with the same subject marker *-nan*; in (1-b) the verb bears the different subject marker *-p*. This correlates with the reference relations between the subjects of the two clauses. Cases such as this one have been taken as paradigmatic instances of SR.

Upon closer scrutiny, however, matters turn out to be more complex. As already noted in the original work on SR (Jacobsen, 1967), one finds cases where the alleged same subject marker occurs in clauses with disjoint subjects. Conversely, different subject markers may show up in clauses that do not contain two subjects to begin with. Examples of such 'non-canonical' SR marking are given in (2) and (3).

(2) Zuni

a. ho' sa-k'ošo-p ho' sa'le' k'uhmo-k'e-nna
1SG.NOM dish-wash-DS 1SG.NOM dish break-CAUS-FUT
'Whenever I wash dishes, I always break a dish.' [Nichols 2000, 7]

b. te'či-p antewa-kya
arrive-DS spend.the.night-PAST
'He arrived and camped [there] for the night.' [Nichols 1997, 26]

(3) Mesa Grande Diegueño (Yuman)
nya-a:lap-č / -m səcu:r-č apəsi:w
when-be.snowing-SS -DS be.cold-SS be.very.much
'When it snows, it's very cold.' [Langdon and Munro 1979, 329]

(2) shows that the alleged different subject marker *-p* in Zuni is in principle compatible with identical subjects. (3), on the other hand, shows the reverse for Yuman: What appears to be a same subject marker is compatible with clauses that obviously do not have coreferring subjects. Indeed, both DS and SS marking is possible here. If the switch reference markers did indeed encode whether the two subjects are coreferent or not, these instances of SR marking would have to be treated as a mysterious exception to the rule. Cases such as the ones in (2) and (3) become even more striking in light of the fact that they are attested in a wide variety of non-related languages, including Amele (Roberts, 1987, 1988), Seri (Marlett, 1981), Choctaw (Davies, 1986), Chechen and Ingush (Nichols, 1983*a*,*b*), Lenakel (Lynch, 1983), Oirata (Donohue, 2008), O'odham (Hale, 1992), Eastern Pomo (McLendon, 1975, 1978), Central Pomo (Mithun, 1993), Haruai (Comrie, 1983), Tonkawa (Jacobsen, 1967), Misumalpan (Hale, 1997), as well as various other Yuman languages in addition to Mesa Grande Diegueño (Langdon and Munro, 1979; Gordon, 1983). Any account of switch reference that abstracts away from these cases leaves a pervasive property of SR systems unaccounted for.

One possibility to handle these cases is to retain the idealized conception of SR as a reference tracking device and trace deviant occurrences of these markers back to intervening factors. Needless to say, as long as these confounding factors and their interaction with the SR system proper are not made explicit, the sheer frequency of cases such as (2) and (3) remains disconcerting. Another possibility, to my knowledge unexplored so far, is to take the cases of non-canonical SR marking at face value and dispense with the notion of SR as a referencing device altogether. Under this approach the distribution of the SR markers is conditioned by factors unrelated to subject reference. The apparent correlation between the occurence of the SR markers and certain reference relations must then be traced back to a conspiracy of other factors. The challenge for such an approach is to identify these factors and make their interaction explicit.

The present paper sets out to elaborate the second possibility. Thus, I will argue that the alleged SR markers do not encode reference relations at all. Rather, they are the context-dependent spell-out of coordination heads. In a nutshell, my proposal centers around the observation that all types of categories, each comprising its own amount of internal structure, may be conjoined. If two VPs are conjoined only one *v* head is projected (above the coordination phrase). Given that the agents is introduced by *v*, the whole structure comprises only a single agent (namely, above the conjunction). This subject is then, by general semantic principles, interpretated

as the agent of both VPs. It follows that an element spelling out the coordination in a VP conjunction necessarily goes hand in hand with an interpretation of the two VPs as having one and the same subject. It is important to note that, first, this element is insensitive to nominal reference, and second, no coreference relations are employed to begin with. Since there is only one subject in the whole structure, notions of subject coreference do not apply. By contrast, *v*P coordination involves two *v*'s and, consequently, two subjects (one in each conjunct). All else being equal, a second marker realizing the coordination head in a *v*P context does hence not entail any reference relations between the subjects, leading to 'unexpected' DS marking as in (2).

The upshot of the analysis developed here is that the descriptive phenomenon of switch reference—in the sense above, viz. verbal marking of reference relations between nominals—is theoretically non-existent. This conclusion supports the modular view that morphological marking and semantic interpretation are not directly linked but mediated only via the syntactic structure which both apply to. As a consequence, morphology and semantics are tied to each other rather loosely. 'Unexpected' SR marking supplies a direct confirmation of this hypothesis. By treating these abundant pattern of switch reference marking as basic, a major reassessment of the phenomenon itself results. The patterns unexpected under previous treatments then emerge as entirely canonical.

The paper is structured as follows: Section 2 will set the stage for the proposal by briefly outlining the background assumptions this work is couched in. Section 3 forms the core of the article. I will exemplify and analyze the SR system of two languages, Amele and Seri. The main focus of this section is to flesh out the account and show how the system handles cross-linguistic variation. Section 4 adopts a broader perspective on SR systems and shows how some recurring properties of SR fall out of the analysis in a natural way. Lastly, section 5 draws a conclusion.

2. Theoretical background

This section illustrates the conceptual background assumptions that the present analysis rests on. Its main ingredients are a realizational theory of morphology, agent-severed syntactic structures, and an event-based semantic interpretation.

I will develop my proposal in terms of Distributed Morphology (DM; see Halle

and Marantz 1993, 1994; Noyer 1992, 1997).[1,2] In the grammatical architecture adopted in DM, morphology applies post-syntactically. In other words, syntax operates on morpho-syntactic feature bundles without phonological specification. After the syntactic derivation is terminated, vocabulary items are inserted into the syntactic structure (*vocabulary insertion*). Vocabulary items (also called 'markers') link a morpho-syntactic specification to phonological features. Vocabulary insertion is realizational in the sense that vocabulary items do not contribute new morpho-syntactic features; rather, they realize morpho-syntactic features that are already part of the syntactic structure. Vocabulary insertion thus designates the process of furnishing syntactic heads with pronounceable features. As it applies post-syntactically, it is sensitive not only to the feature content of the syntactic heads themselves but also to the syntactic context of the head (within some well-defined domain). To take an example, a certain vocabulary item may require the structural context to contain an element of a certain category. Unless this requirement is fulfilled, the marker may not be inserted.

In order to account for syncretism, i.e. the phenomenon that distinct morpho-syntactic specification may receive identical morphological marking, DM employs underspecification of vocabulary items. Markers may only be inserted if they fulfill the *Subset Principle* in (4), viz. if their morpho-syntactic feature specification constitutes a subset of the features of the relevant syntactic head. Once underspecification is employed, a marker may fulfill the Subset Principle for more than one context. Consequently, more than one marker may fulfill the Subset Principle for a given morpho-syntactic specification. To decide among several such markers, the notion of *Specificity* in (5) is employed. Specificity requires that among all markers fulfilling the subset principle for a given head, only the marker with the most morpho-syntactic features is inserted.

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[1] See Harley and Noyer (1999, 2003), and Embick and Noyer (2007) for an overview of Distributed Morphology.

[2] It is worth emphasizing that the analysis developed below makes use of machinery that is solely available in DM. First, my core assertion that a coordination head is spelled out depending on its syntactic context is incompatible with lexicalist theories of morphology, which decidedly reject such interactions (cf., e.g., Lieber, 1980; Williams, 1981; Selkirk, 1982; Di Sciullo and Williams, 1987). Second, as will be become clear from the discussion of Amele in section 3.1, the coordination head must be able to interact with the morphological structure of an adjacent verb. While this is straightforwardly accomplished in DM, lexicalist and inferential frameworks of morphology do not provide the means to capture this behavior (inferential theories include A-Morphous Morphology [Anderson 1992], Network Morphology [Corbett and Fraser 1993], and Paradigm Function Morphology [Stump 2001; Steward and Stump 2007]). Thus, to the extend that the present proposal is on the right track, it may be seen as evidence for the conflation of syntax and morphology embodied within DM.

(4) *Subset Principle*
A vocabulary item V is inserted into a functional morpheme M iff (i) and (ii) hold:
(i) The morpho-syntactic features of V are a subset of the morpho-syntactic features of M.
(ii) V is the most specific vocabulary item that satisfies (i).

(5) *Specificity*[3]
A marker M_1 is more specific than a marker M_2 iff M_1 contains more morpho-syntactic features than M_2.

To illustrate, consider the abstract morpho-syntactic specification Γ in (6-a) and the three markers in (6-b), which compete for insertion into Γ.

(6) a. $\Gamma = \{+\alpha, -\beta, +\gamma\}$
b. /a/ $\leftrightarrow$ $[+\alpha]$
/b/ $\leftrightarrow$ $[-\beta, +\gamma]$
/c/ $\leftrightarrow$ $[-\alpha, +\gamma]$

According to requirement (i) of the Subset Principle (4), /c/ is excluded from the competition as $\{-\alpha, +\gamma\} \not\subseteq \Gamma$. Among /a/ and /b/, Specificity favors /b/ because $\left|\{-\beta, +\gamma\}\right| > \left|\{+\alpha\}\right|$. Hence, /b/ is the most specific marker fulfilling the Subset Principle and hence inserted into Γ.
Next, it can be demonstrated on the basis of coordination marking that the syntactic configuration may affect the morphological exponence a given head receives. Various languages show a dependence of morphological coordination marking to the narrow syntactic context (cf. Haspelmath, 2005). Thus, different conjunctions are employed for, e.g., VP and NP coordination. To illustrate, consider the data in (7), taken from Somali.

(7) Somali
a. rooti iyo khudrat
bread CONJ fruit
'bread and fruit'
b. wuu cunay oo cabbay
FOC.3SG.MASC eat CONJ drink
'He ate and drank.'

[3]For this formulation of Specificity see Halle (1997).

c. macallin-ku wuxuu joogaa dugsi-ga, carruur-ta-na
teacher-ART FOC.3SG.MASC be school-ART children-ART-CONJ
waxay ku cayaarayaan dibed-da
FOC.3PL PREV play outside-ART
'The teacher is in the school, and the children are playing outside.'
[Berchem 1991, 324-327]

(7) demonstrates how the overt form of the conjunction may vary depending on the category of the conjoined elements: The coordination is *iyo* in a nominal environment (7-a), *oo* between two VPs (7-b), and *-na* if two clauses are coordinated as in (7-c). The same has also been observed for, e.g., the Oceanic language Xârâcùù (Moyse-Faurie and Lynch, 2004), Chamorro (Austronesian), Maori (Polynesian), and Yapese (Micronesian), and the Gur language Yapese (Haspelmath, 2007).[4]
This context-sensitivity of morphological marking is implemented here by specifying the morpho-syntactic features of a vocabulary item not only for the head that insertion applies to but also for categories in its environment. Thus, in all examples in (7) the syntactic head is the same; it is only the spell-out that varies.
Syntactically, I follow the dominant view in contemporary generative syntax that the external argument of a verb is not introduced by the verbal head itself but rather by the functional projection *v*P. Thus, I adopt the neo-Davidsonian position that the subject is not an argument of the verb (see Marantz, 1984, 1997; Larson, 1988; Kratzer, 1994, 1996, 2003; Pylkkänen, 2002, 2008). Severing the external argument from the verb yields a phrasal node that does not contain the subject (namely, VP). This in turn opens up the possibility of conjoining two subject-less constituents without violation the θ-criterion or some such requirement.[5]
As for the semantic interpretation of agent-severed verb structures, I adopt the event-based approach developed by Kratzer (1996). Kratzer proposes that *v* (her *voice* head) and VP are combined semantically via *event identification* in (8).[6]

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[4]Also see example (63) from Fongbe.

[5]I will adopt here without discussion the view that the external argument, but not the internal argument, is severed from the verb. The analysis remains largely unaffected if, in addition, the internal argument is introduces by a functional head as well, as, e.g., in Borer (2005). See, however, Kratzer (2003) for arguments against severing patients from their verbs as well.

[6]Event identification has a broader domain of application than just to handle agent-introducing functional heads. It is also needed for adverbial modification and the like.

(8) *Event identification* (Kratzer, 1996, 122)

f	g	→	h
$\langle e,\langle s,t\rangle\rangle$	$\langle s,t\rangle$		$\langle e,\langle s,t\rangle\rangle$
			$\lambda x_{\langle e\rangle}\lambda e_{\langle s\rangle}[f(x)(e) \wedge g(e)]$

Applied to the case at hand, event identification takes a VP (type: $\langle s,t\rangle$) and a *v* head (type $\langle e,\langle s,t\rangle\rangle$) and gives the denotation $\lambda x_{\langle e\rangle}\lambda e_{\langle s\rangle}[f(x)(e) \wedge g(e)]$ (type: $\langle e,\langle s,t\rangle\rangle$). As an illustration of this system, consider the sentence *Mary likes John*, which has the phrase structure in (9). The relevant steps of the semantic interpretation are given in (10).

(9) $[_{vP}$ Mary *v* $[_{VP}$ likes John]]

(10) *Semantic computation for (9):*[7]

a. Terminal nodes:

$$[\![\text{like}]\!]_{\langle e,\langle s,t\rangle\rangle} = \lambda x_{\langle e\rangle}\lambda e_{\langle s\rangle}.\ \textsc{like}(x)(e)$$
$$[\![v]\!]_{\langle e,\langle s,t\rangle\rangle} = \lambda x_{\langle e\rangle}\ \lambda e_{\langle s\rangle}.\ \textsc{agent}(x)(e)$$
$$[\![\text{John}]\!]_{\langle e\rangle} = \textsc{John}$$
$$[\![\text{Mary}]\!]_{\langle e\rangle} = \textsc{Mary}$$

b. Non-terminal nodes:

$$[\![\text{VP}]\!]_{\langle s,t\rangle} = [\![\text{like}]\!]\ ([\![\text{John}]\!]) \overset{\text{F.A.}}{=} \lambda e_{\langle s\rangle}.\ \textsc{like}(\textsc{John})(e)$$
$$[\![\bar{v}]\!]_{\langle e,\langle s,t\rangle\rangle} = [\![v]\!]\ [\![\text{VP}]\!] \overset{\text{E.I.}}{=} \lambda x_{\langle e\rangle}\lambda e_{\langle s\rangle}.\ \textsc{like}(\textsc{John})(e) \wedge \textsc{agent}(x)(e)$$
$$[\![v\text{P}]\!]_{\langle s,t\rangle} = [\![\bar{v}]\!]\ ([\![\text{Mary}]\!]) \overset{\text{F.A.}}{=} \lambda e_{\langle s\rangle}.\ \textsc{like}(\textsc{John})(e) \wedge \textsc{agent}(\textsc{Mary})(e)$$

The *v*P denotation in (10) may be paraphrased as 'the set of all events such that John is liked in this event and Mary is the agent of this event'.[8] Put differently, Mary is the agent of a 'John-liking' event. Thus, despite not being an argument of the verb *like*, by means of event identification one nevertheless achieves the desired interpretation that Mary is the one who likes John.

If a clause does not contain an agent (e.g. in the case of unaccusative verbs) I assume *v* nevertheless to be present, if only for syntactic reasons. Semantically, it is interpreted vacuously, i.e. as the identity function. I will term a *v* head that

[7] 'F.A' abbreviates functional application. 'E.I.' designates event identification.

[8] Following Kratzer (1996), I assume the event operator to be existentially bound higher up in the tree, presumably in the T domain. The closing-off of event variables will be irrelevant for what is to come and is hence neglected. See Kratzer (2003) for discussion.

introduces an agent argument as 'complete' (v_{comp}) and refer to v that does not so as 'defective' (v_{def}). It is of course expected that this distinction coincides with syntactic properties, such as the ability to assign accusative case (Burzio, 1986, 2000) or, maybe, phasehood (see Chomsky, 2000, 2001).

In sum, in this section I have laid out the theoretic background assumptions adopted here. First, morphology applies post-syntactically and in a realizational fashion; second, subjects are not arguments of the lexical verb but instead introduced by a functional head; and third, event-based semantic representations. Against this background, let us turn to the main proposal by examining two switch reference systems on the basis of which the present account will be developed.

3. Proposal

In this section I will lay out the main claims of this paper by investigating the SR systems of Amele and Seri, which are sufficiently different from each other to develop the system is some breadth and show how cross-linguistic variation can be accounted for.

3.1. Amele

Amele is spoken in Papua New Guinea and has been documented in Roberts (1987, 1988, 1990, 2001). I will proceed by first laying out the empirical generalizations of the Amele SR sysem and then go on to develop an account for them.

3.1.1. Empirical evidence

Amele exhibits a switch reference system in serial verb constructions. These constructions are made up of an arbitrarily long sequence of *medial* verbs, followed by one *final* verb. The medial verbs contain markers for ϕ-agreement, the sequentiality or simultaneity of the depicted events and, most importantly, bear SR markers. In addition, verbs that are marked for simultaneity and DS appear in one of two forms, depending on whether the final verb is in realis or irrealis mood. The final verb, on the other hand, encodes ϕ-agreement, mood, and tense/aspect. The morphological exponence of these features is complex and not relevant for present purposes. The reader is referred to Roberts (1990) for illustration and discussion. Roberts (1988) demonstrates convincingly that these serial verb constructions involve coordination as they clearly differ from subordinate clauses with respect to various syntactic diagnostics. This observation is at variance with an approach to

SR in terms of binding such as Finer (1984, 1985) since in coordination structures elements embedded in the conjoined constituents do not c-command elements of the other conjunct. If c-command is a necessery prerequisite for binding, as standardly assumed, binding configurations should not arise in coordinate constructions and an SR-system should not be possible, quite contrary to fact. I will follow Roberts' coordination analysis here.[9] A generalization that will prove crucial for the present account is that while in DS structures several subjects may appear, SS structures contain only one subject.
Examples for the Amele SR system are provided in (11) and (12).[10]

(11) a. Ija hu-m-ig sab j-ig-a
1SG come-SS-1SG food eat-1SG-TOD.P
'I came and ate the food.'
b. Ija ho-co-min sab ja-g-a
1SG come-DS-1SG food eat-2SG-TOD.P
'We came and you ate the food.' [Roberts 1988, 49]

(12) a. Ho bu-busal-en dana age qo-in
pig SIM-run.out-3SG-DS man 3PL hit-3PL-REM.P
'As the pig ran out the men killed it.' *(realis)*
b. Ho bu-busal-eb dana age qo-u-b
pig SIM-run.out-3SG-DS man 3PL hit-CONTR-3SG
'The men would have killed the pig as it ran out.' *(irrealis)*
[Roberts 1988, 55]

(11-a,b) are examples of SS/DS marking in sequential aspect, i.e. the activities depicted by the verbs take place consecutively. Notice that ϕ-agreement is marked on both verbs, whereas only the final verb bears tense marking. (12-a,b), by contrast, are instances of SR marking in simultaneous aspect. Note here that the exponence of the DS marker is sensitive to the mood of the final verb. Thus, in (12-a) the DS marker takes the form *-en*, while in (12-b) the DS marker surfaces as *-eb*.
As mentioned above, SR marking in Amele is restricted to serial verb constructions. No SR marking takes place in subordinate clauses, as (13) attests. (13-a) exemplifies complement clauses, (13-b) illustrates relative clauses. Thus, subordination structures become ungrammatical as soon as an SR marker is attached to them, as in the respective examples in (ii).

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[9] A coordination structure is also argued for by Comrie (1983), Haiman (1983), and Franklin (1983) for various other SR languages.

[10] The following abbreviations are used: CONTR=contrafactual mood, Q=question marker, R=realis, REM.P=remote past, TOD.P=today's past, YEST.P=yesterday's past.

(13) a. (i) Ija dana age ija na ho qo-ig-a d-ug-a
1SG man 3PL 1SG of pig hit-3SG-TOD.P know-1SG-TOD.P
'I know the men killed my pig.'
(ii) *Ija dana age ija na ho qo-co-bil d-ug-a
1SG man 3PL 1SG of pig hit-DS-3PL know-1SG-TOD.P
b. (i) Ho mel heje o-i-a eu ene nij-i-a
pig boy illicit take-3SG-TOD.P that here lie-3SG-TOD.P
'The pig that the boy stole is here.'
(ii) *Ho mel heje o-co-b e ene nij-i-a
pig boy illicit take-DS-3SG that here lie-3SG-TOD.P
[Roberts 1988, 54]

Furthermore, SR marking must not co-occur with an overt coordination such as *qa* 'but' or *ca* 'and'. (14) shows that the SR markers have to be absent if a coordination is employed. In other words, SR markers and coordinations are in complementary distribution. Notice incidentally that the use of a coordination yields tense marking on both verbs. Thus the asymmetry between medial and final verbs witnessed in SR marking structures disappears. Both tense specifications are in principle independent of each other as shown in (14-c).

(14) a. Ho busale-i-a qa dana age qo-ig-a
pig run.out-3SG-TOD.P but man 3PL hit-3PL-TOD.P
'The pig ran out but the men killed it.' [Roberts 1988, 55]
b. *Fred ho-co-b / ho-ho-b qa/ca uqa sab
Fred come-DS-3SG SIM.come-DS-3SG but/and 1SG food
j-igi-an
eat-3SG-FUT
[Roberts 1988, 58]
c. Fred cum ho-i-an qa Bill uqadec
Fred yesterday come-3SG-YEST.P but Bill tomorrow
h-ugi-an
come-3SG-FUT
'Fred came yesterday but Bill will come tomorrow.' [Roberts 1988, 52]

In all examples considered so far, DS marking correlates with a change of the subject. Conversely, SS marking implied two identical subjects. Upon closer investigation, this apparent connection breaks down to some extent. First, DS marking is in fact possible with identical subjects. Second, verb series that do not contain identical subjects nevertheless receive SS marking under certain conditions.
As for the first case, viz. 'unexpected' DS marking, clauses with two identical subjects may nevertheless optionally receive DS marking. These instances of DS marking implies a slightly different semantic interpretation than their SS coun-

terpart. As Roberts (1988, 60) states, DS marking in these cases entails "deictic changes [...] in the area of world, time, or place reference points" between the events of the two verbs. Native speakers indicate that "something has changed" or "a new situation". The events referred to by the two verbs are thus interpreted as disconnected. This meaning is absent if SS marking is employed. In this case, the two events are tightly connected. If the subjects of the two verbs is identical, the choice of SS versus DS marking is optional, bringing about the observed semantic consequences.[11] Relevant examples for this usage of the DS marker are provided in (15).

(15) a. Eu 1977 jagel November na odo-co-b cul-ig-en
that 1977 month November in do-DS-3SG leave-1PL-3SG-REM.P
'That was in November 1977 that he_i did that and then he_i left it for us.'

b. Age ceta guldo-co-bil l-i bahim na tac-ein
3PL yam carry-DS-3PL go-(SS) floor on fill-3PL-REM.P
'They carried the yams on their shoulders and went and filled up the yam store.'

c. Mike uqa car tuli-do-co-b jic tod-u b-i
Mike 3SG car start-3SG-DS-3SG road follow-(SS) come.up-(SS)
Sioba na jo cemenug ono uqa car heew-ce-b
Sioba of house near there 3SG car hold-DS-3SG
taw-en
stand-3SG-REM.P
'Mike started the car and then followed the road up to Sioba's house and held the car as it stood there near the house.' [Roberts 1988, 61]

All examples in (15-a-c) contain DS marking with coreferring subjects. Correspondingly, the two events are interpreted as disconnected in time or space.
Conversely, 'unexpected' SS marking, viz. in verb series without identical subjects, is attested as well. If one of the two conjuncts is a weather verb or an impersonal construction, SS marking is used. DS marking is available as well, though leading to a causative interpretation.
Consider first weather verbs. If one conjunct in an SR structure contains a weather verb, SS marking is used, despite the fact that the entire structure only contains one subject. See (16).

[11] As Roberts (1988, p. 61 fn. 20) puts it "where the category SS is clearly established across a string of clauses, the speaker has the option of using the DS marker for a higher-level discourse function to indicate other deictic changes."

(16) Ija co-cob-ig wa hedo-i-a
1SG SIM-walk-1SG.SS water finish-3SG-TOD.P
'As I walked along the rain stopped.' [Stirling 1993, 87]

The second instance of unexpected SS marking are impersonal constructions. Syntactically, they consist of (i) an experiencer DP which triggers object agreement; (ii) certain nominals describing physical experiences,[12] and (iii) a verbal element consisting only of 3rd person singular subject agreement, object agreement and tense. The construction is discussed extensively by Roberts (2001). An example for an impersonal construction is given in (17).

(17) Ija wen t-ei-a
1SG hunger 1SG.DO-3SG.SUBJ-TOD.P
'I was hungry.' [Roberts 2001, 201]

In (17), the verb shows 3SG subject agreement. The experiencer DP *ija* '1SG' triggers object agreement. Thus, the experiencer is most plausibly analyzed as an internal argument, i.e. an argument of the verb, not *v*. An agent is simply not projected, hence the structure involves v_{def}. The default 3SG subject agreement is, I suppose, a pure last resort phenomenon, viz. default agreement in the absence of a suitable goal DP.[13] If an impersonal construction forms part of an SR-marked structure, SS is employed, as exemplified in (18).

(18) a. Ege co-cob-ob wen g-en
1PL SIM-walk-1PL.SS.R hunger 1PL.DO-3SG.REM.P
'As we walked we became hungry.' [Roberts 2001, 228]
b. Ija ta-taw-ig ija am-i wal-do-i-a
1SG SIM-stand-1SG.SS I eye-1SG spin-3SG-3SG-TOD.P
'As I stood my eye(s) spun (= I became dizzy).' [Stirling 1993, 86]

In both (16) and (18) SS marking is non-canonical as these structures do not contain

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[12]Some of these nominals only occur in impersonal constructions and may not be used productively.

[13]The emerging structure is thus identical to passives or unaccusative verbs. In this respect it may be noteworthy that Amele has a 'pseudo-passive' construction Roberts (1987) with much the same properties. (i) gives an example.

(i) Na qet-ade-i-a
tree cut-3PL-3SG-TOD.P
'The trees have been cut down; someone has cut down the trees.' [Stirling 1993, 244]

two identical subjects, simply because one conjunct does not comprise a subject to begin with.

As always in Amele, one may replace the SS marker in (16) and (18) with the DS marker, leading to a semantic difference. If DS marking is employed with weather verbs or impersonal constructions, a causative reading is obligatory as (19) attests.[14]

(19) a. ?Ija co-cob-igin wa hado-i-a
1SG SIM-walk-1SG.DS water finish-3SG-TOD.P
'As I walked along something made the rain stop.' [Stirling 1993, 90]

b. Ege co-cob-oqon wen g-en
1PL IM-walk-1PL.DS.R hunger 1PL.DO-3SG.REM.P
'As we walked something made us hungry.' [Roberts 2001, 228]

c. Ija ta-taw-igin ija am-i wal-do-i-a
1SG SIM-stand-1SG.DS I eye-1SG.POSS spin-3SG-3SG-TOD.P
'As I stood something caused my eye(s) to spin.' [Stirling 1993, 89]

Having established the main empirical generalizations of SR marking in Amele, I will propose an analysis in terms of coordination.

3.1.2. Analysis

As the point of departure for analyzing the observations made above, I suggest we take the cases of 'unexpected' DS and SS marking, problematic for most previous treatments, as revealing about the nature of SR systems. Given that both DS and SS marking may occur in structures that have identical subjects and structure that have not, I contend that there is in fact no direct connection between SR marking and the reference relations between the subjects. As the presence of either marker entails nothing about the reference relations of the subjects, the most straightforward analysis is one that does not treat these items as reference tracking devices at all. Instead, I will argue that these elements are mere instantiations of a coordination head, which receive context-sensitive spellout depending on the category of the syntactic elements it has been merged with. As an initial piece of evidence for such an analysis, recall from (14) above that SR marking and overt coordinations stand in complementary distribution. This now follows without further ado. SR markers being realizations of a coordination head, they compete with other coordination markers such as *qa* 'but' for insertion into the same syntactic head. There

[14]Causative interpretation of weather verbs such as (19-a) may be judged odd for pragmatic reasons but that has no bearing on the matter at hand.

can never exist more than one of these markers in a given coordination as there is only insertion place available.

At the outset, let us suppose that, unless otherwise sipulated, all verbal projections may be conjoined. This process is substantially restricted by the general requirement that the conjuncts have to have the same status (the so-called *Law of Coordination of Likes*; Williams 1978). Thus, the three possible coordination structures in (20) do occur.[15,16]

(20) a. $[_{\&P}$ VP $[_{\overline{\&}}$ &° VP]]
b. $[_{\&P}$ *v*P $[_{\overline{\&}}$ &° *v*P]]
c. $[_{\&P}$ TP $[_{\overline{\&}}$ &° TP]]

Of course, '&P' is merely a convenient shorthand for a more complex label. As is widely known, conjunctions as a whole behave syntactically just as the conjoined elements do. Thus, the '&P' in (20-a) counts as a VP for all syntactic respects and may therefore merge with *v*.

A simplified respresentation for the semantic interpretation of &° is given in (21).[17]

(21) $[\![\&^\circ]\!]_{\langle\langle s,t\rangle,\langle\langle s,t\rangle,\langle s,t\rangle\rangle\rangle} = \lambda P_{\langle s,t\rangle}\ \lambda Q_{\langle s,t\rangle}.\ P \wedge Q$

---

[15]I will presuppose here without discussion that coordination structures are asymmetric, with the first conjunct in the specifier position of the coordinator &° and the second conjunct in its complement position (cf. Munn, 1993; Kayne, 1994; Zoerner, 1995; Johannessen, 1998; Progovac, 1998*a*,*b*; de Vos, 2005). Alternative structures, including flat ones as proposed in, e.g., Jackendoff (1977) and Chomsky (1981), work equally well.

[16]For reasons of simplicity, I will ignore CP coordinations, although of course they may be attested as well. See footnote 20.

[17]While restricting the type of the conjuncts to ⟨s,t⟩ is sufficient for present purposes it is clearly too restrictive to account for coordination in general. As a more elaborate definition consider, e.g., the one in (i), adapted from Partee and Rooth (1983, 363).

(i) *Conjoinable type*
a. *t* is a conjoinable type
b. if τ is a conjoinable type, then for all σ, $\langle\sigma,\tau\rangle$ is a conjoinable type.

With the definition in (i) in place and defining σ as a variable over all conjoinable types the semantics of coordination can be defined as in (ii).

(ii) $[\![\&^\circ]\!]_{\langle\sigma,\langle\sigma,\sigma\rangle\rangle} = \lambda P_{\langle\sigma\rangle}\lambda Q_{\langle\sigma\rangle}[P \wedge Q]$

The definition in (ii) also captures nominal coordination if the type of the conjuncts is lifted to ⟨⟨e,t⟩,t⟩, so that, e.g., $[\![\text{John}]\!]=\lambda P[P(\text{JOHN})]$. Thus, *John and Mary* can be represented as $[\lambda P(\text{JOHN}) \wedge \lambda Q(\text{MARY})]$, which, by (22), is itself of type ⟨e,t⟩.

As for functional application of coordination structure, I assume the identity function in (22) (Krifka, 1990, 162).

(22) If α, α' are two expressions of type $\langle\sigma,\tau\rangle$ which can be conjoined by Boolean conjunction $\wedge$, and if β is an expression of type σ, we have: $[\alpha \wedge \alpha'](\beta) = \alpha(\beta) \wedge \alpha'(\beta)$.

The denotation of the two *v* heads is given in (23).

(23)
$$[\![v_{\text{comp}}]\!]_{\langle e,\langle s,t\rangle\rangle} = \lambda x_{\langle e\rangle}\, \lambda e_{\langle s\rangle}.\ \textsc{agent}(x)(e)$$
$$[\![v_{\text{def}}]\!]_{\langle\langle s,t\rangle,\langle s,t\rangle\rangle} = \lambda P_{\langle s,t\rangle}.\ P$$

On the morphological side, the specifications for the relevant markers are provided in (24).

(24) *Vocabulary items*

/DS/ ↔ [&°, vP$_{\text{comp}}$__vP$_{\text{comp}}$]
/SS/ ↔ [&°]
/qa/ ↔ [&°, TP__TP]

The shorthands /SS/ and /DS/ in (24) abbreviate a complex cluster of phonological properties of the SS and DS marker. Depending on the context, these markers may be realized as segmental morphemes or reduplication. I will abstract away from these complications and work with the more convenient labels in (24) instead. All three vocabulary items in (24) are realizations of a coordination head. Two of them are further specified for the context of insertion. Thus, /DS/ may only be inserted into a &° head which has merged to two vP$_{\text{comp}}$, viz. which has one vP$_{\text{comp}}$ in its complement position and one in its specifier. In the same vein, the coordination *qa* 'but' realizes &° if it conjoins two TPs. Finally, the alleged SS marker is underspecified with respect to the context of the coordination head. It constitutes the elsewhere marker.

With the semantics and morphology in place, let us turn to the syntactic specifications of the heads under considerations. I will presuppose that *v* contains ϕ-probes that agree with the subject and the object. Tense and aspect information is located on T. As for spellout of *v*'s ϕ-probes, suppose they are realized on V. Various technical possibilities proposed in the DM literature may be used to achieve this, *inter alia* morphological merger, local dislocation, lowering etc. (cf., e.g., Marantz, 1984, 1988; Halle and Marantz, 1993, 1994; Bobaljik, 1994; Embick and Noyer, 2001; Embick, 2007; Embick and Noyer, 2007). For the sake of concreteness, I will adopt a lowering analysis, according to which T, hosting the ϕ-features, is merged with V post-syntactically (but before vocabulary insertion). This treatment, going back to Chomsky's (1957) mechanism of *affix hopping*, is extensively discussed and justified by Embick and Noyer (2001). As a consequence, in a simple

transitive clause ϕ-agreement surfaces on V phonologically. In a VP coordination structure I suppose verbal agreement to be realized on both verbs, as depicted in (25). Notice that a mechanisms largely equivalent to the one in (25) is independently necessary to account for the behavior of case percolation in coordinations. Thus, if a coordination of, e.g., two DPs occurs in object position then case is realized on both DPs separately rather than at the coordination phrase as a whole, as is evident in languages with overt case morphology. Whatever the precise characterization turns out to be, a process that percolates properties assigned to the &P as a whole down to the individual conjuncts is thus independently called for. I take the very same mechanism to be responsible for (25). Here as well a property assigned to &P as a whole percolates down to the heads of the two conjuncts. Only (25), percolating the agreement information down to *both* V's, conforms to the Law of Coordination of Likes.[18]

(25) *Phonological realization of verbal agreement*

$v\ [_{\&P}\ [_{VP} \ldots \mathrm{V}_1 \ldots]\ \&^0\ [_{VP} \ldots \mathrm{V}_2 \ldots]]$

The last point concerns the morphological placement of the coordination head. All else being equal, one would expect it to occur between the two clauses. Inspection of, e.g., (11) reveals that this is not correct: Rather than after the complex verb of the final clause, the marker shows up between the stem and the agreement affix. I will treat this phenomenon as a syntax-morphology mismatch, as familiar from work in Distributed Morphology. The *local dislocation* operation in (26), operating on a linearly adjacent exponents, inverts the order between the exponent spelling out the coordination head and the agreement marker (the reader is again referred to Embick and Noyer 2001 for discussion and justification).[19]

(26) *Local dislocation*

AGR $*$ SR $\rightarrow$ SR $*$ AGR

With these ingredients in place, consider first an instance of 'canonical' SS marking in (27) (=(11-a)), which I propose has the structure in (28). Under the present analysis, (27) constitutes an instance of VP coordination. Only one *v* projects,

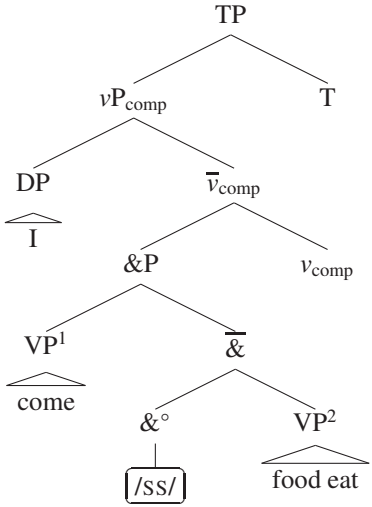
[18] An interesting prediction is made for cases where ϕ-agreement is not realized on V, but rather on *v*. It should occur twice in DS structures but only once in SS structures. Such patterns are indeed attested in several languages. See section 4.3.

[19] The symbol '$*$' designates linear ordering.

hence the structure only contains one subject which is interpreted as the agent of both verbs.

(27) Ija hu-m-ig sab j-ig-a
1SG come-SS-1SG food eat-1SG-TOD.P
'I came and ate the food.'

(28) *Analysis of (27)*



Since &° in (28) stands in a local relationship with two VPs, out of the vocabulary items in (24) only the elsewhere marker /SS/ fulfills condition (i) of the Subset Principle in (4) and, being trivially the most specific marker, is hence inserted. It surfaces as *-m* in (27). The semantic computation is provided in (29), including various intermediate steps for ease of exposition.

(29) *Semantic interpretation of (28):*

$$
\begin{aligned}
[\![\mathrm{VP}^1]\!] &= \lambda e.\textsc{come}(e) \\
[\![\mathrm{VP}^2]\!] &= \lambda e'.\textsc{eat}(\textsc{food})(e') \\
[\![\&\mathrm{P}]\!] &= [\lambda e.\textsc{come}(e)] \wedge [\lambda e'.\textsc{eat}(\textsc{food})(e') \\
[\![\bar{v}]\!] &= [\![v_{\mathrm{comp}}]\!]\ [\![\&\mathrm{P}]\!] \\
&\overset{\text{E.I.}}{=} \lambda x \lambda e''.\textsc{agent}(x)(e'') \wedge \\
&\qquad\qquad [\lambda e.\textsc{come}(e) \wedge \lambda e'.\textsc{eat}(\textsc{food})(e')](e'') \\
&\overset{(22)}{=} \lambda x \lambda e''.\textsc{agent}(x)(e'') \wedge \\
&\qquad\qquad [\lambda e.\textsc{come}(e)](e'') \wedge [\lambda e'.\textsc{eat}(\textsc{food})(e')](e'') \\
[\![\bar{v}]\!] &\overset{\text{F.A.}}{=} \lambda x \lambda e''.\textsc{agent}(x)(e'') \wedge \textsc{come}(e'') \wedge \textsc{eat}(\textsc{food})(e'') \\
[\![v\mathrm{P}]\!] &= \lambda e''.\textsc{agent}(\mathrm{I})(e'') \wedge \textsc{come}(e'') \wedge \textsc{eat}(\textsc{food})(e'')
\end{aligned}
$$

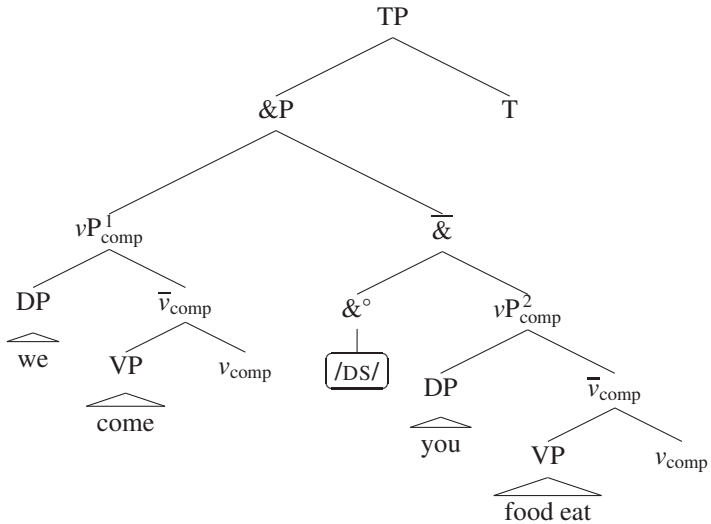
The final semantic representation asserts that there is a single event of both coming and eating, the agent of which is the speaker. It thus captures the fact that the speaker is interpreted as the agent of both verbs, as desired. It is important to note that the analysis of (27) does not involve coreference. Instead, there is only one subject to begin with, so no reference tracking takes place. Also notice that the appearance of the SS marker is only very loosely and indirectly tied to the specific interpretation of the clause. The semantic and morphological interface deal with the structure in (28) in their own way, insensitive to each other. The apparent connection between marking and interpretation only arises because certain structures bear certain markers and receive a certain interpretation.

As a second example, consider instances of 'expected' DS marking, viz. DS marking with disjoint subjects. An example is (11-b), repeated here as (30).

(30) Ija ho-co-min sab ja-g-a
1SG come-DS-1SG food eat-2SG-TOD.P
'We came and you ate the food.'

As is evident, (30) contains two subjects, hence two v_{comp} have to be projected, conjoined by a coordination. The syntactic structure is given in (31).

(31) *Analysis of (30)*



Of the three vocabulary items in (24), /DS/ and /SS/ fulfill requirement (i) of the Subset Principle. /DS/ is more specific than /SS/ and hence inserted into the coordination head. On the semantic side, interpretation proceeds as illustrated in (32).

(32) *Semantic interpretation of (31):*

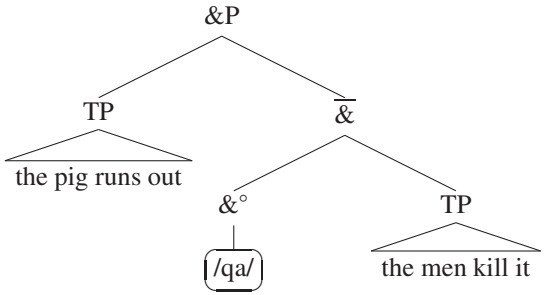
$$\begin{aligned}
[\![v\mathrm{P}^1]\!] &= \lambda e.\textsc{agent}(\textsc{we})(e) \wedge \textsc{come}(e) \\
[\![v\mathrm{P}^2]\!] &= \lambda e'.\textsc{agent}(\textsc{you})(e') \wedge \textsc{eat}(\textsc{food})(e') \\
[\![\&\mathrm{P}]\!] &= \lambda e[\textsc{agent}(\textsc{we})(e) \wedge \textsc{come}(e)] \wedge \\
&\qquad \lambda e'[\textsc{agent}(\textsc{you})(e') \wedge \textsc{eat}(\textsc{food})(e')]
\end{aligned}$$

&P thus denotes a conjunction of two separate events, each with its own agent. Again, there exists no direct link between the interpretation and the morphological marking a structure receives.

Let us now turn to an instance of TP coordination, as exemplified by (14-a), repeated below for convenience. The structure of (33) is given in (34).

(33) Ho busale-i-a qa dana age qo-ig-a
pig run.out-3SG-TOD.P but man 3PL hit-3PL-TOD.P
'The pig ran out but the men killed it.'

(34) *Syntactic structure of (33)*



In a conjunction of two TPs, /SS/ and /qa/ in (24) form a subset of the feature specification, hence /qa/ is inserted due to Specificity. As already hinted at above, this analysis immediately accounts for the observation that the alleged SR markers and coordinations in traditional terminology stand in complementary distribution. Both the SR markers as well as canonical coordinations compete for the same position, so that insertion of either one of them bleeds insertion of the others. Furthermore, treating (33) as TP coordination entails the existence of two T projections, each of which may be independently specified. This first accounts for the fact that tense morphology surfaces on both verbs, as apposed to SR structures, which involve only one T head and concomitantly mark tense only on the final verb. Second, the specifications of these T heads is independent of each other, deriving the possi-

bility of tense mismatches in TP coordination structures, as exemplified by (14-c) above.[20]

By denying the existence of any direct link between semantic properties such as reference relations and morphological exponence, the present systems straightforwardly extends to cases of so-called 'unexpected' SR marking. First, consider DS marking occurring with identical subjects. Examples of this pattern can be found in (15) above. (15-a) is repeated here as (35).

(35) Eu 1977 jagel November na odo-co-b cul-ig-en
that 1977 month November in do-DS-3SG leave-1PL-3SG-REM.P
'That was in November 1977 that he_i did that and then he_i left it for us.'

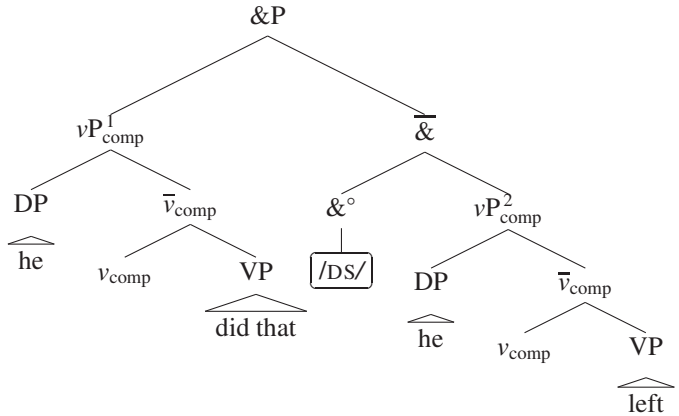
I propose that the structure of (35) is just that assigned to DS marking in general, i.e. *v*P coordination. The only relevant difference to (30) is that the two subjects happen to be interpreted as coreferential, with no binding or reference tracking involved. As evident from the structure in (36), there exist two subject pronouns that merely happen to be assigned the same referent. The semantic representation of the &P node is given in (37).

[20]There is some indication that *qa* 'but' may also conjoin CPs as the two conjuncts may vary with respect to their clause type. The example in (i) involves an assertive and an interrogative conjunct. Under the assumption that clause type is a feature of C each conjunct has to contain a separate C projection.

(i) Ho busale-i-a qa dana age qo-i-ga fo?
pig run.away-3SG-TOD.P but man 3PL hit-3PL-TOD.P Q
'The pig ran away but did the men kill it?' [Roberts 1988, 52]

As this matter does not directly bear on the question of switch reference, I will neglect it here. Such a difference in clause type is not possible in SR structures, as expected under the present analysis.

(36) *Syntactic structure of (35)*



(37) $[\![\&P]\!] = \lambda e[\text{AGENT(HE)}(e) \wedge \text{DO(THAT)}(e)] \wedge \lambda e'[\text{AGENT(HE)}(e') \wedge \text{LEAVE}(e')]$

In (36), no referential dependency is established between both pronouns. Coreferentiality merely arises as the consequence of the variable assignment function, which maps both instances of *he* onto the same individual. It thus follows that coreference is not mandatory in these cases, i.e. disjoint reference remains an option. This is correct as we are dealing with DS structures here.

A comparison of the semantics of *v*P coordination structures with two coreferent subjects, such as (36), and instances of VP coordination reveals that there is a subtle difference with respect to the distribution and scope of the event variables. They are not logically equivalent. To see this, compare VP coordination (with concomitant SS marking) in (38-a) and *v*P coordination with identical subjects in (38-b).

(38) a. *Semantics for VP coordination (e.g., (29)):*
$[\![vP]\!] = \lambda e[\text{AGENT}(\alpha)(e) \wedge [\![VP]\!](e) \wedge [\![VP]\!](e)]$

b. *Semantics for vP coordination with coreferent subjects (e.g., (37)):*
$[\![\&P]\!] = [\lambda e[\text{AGENT}(\alpha)(e) \wedge [\![VP]\!](e)] \wedge \lambda e'[\text{AGENT}(\alpha)(e') \wedge [\![VP]\!](e')]]$

The first difference between (38-a) and (38-b) is that in (38-a) the whole structure contains only one agent, while there are two agents in (38-b), which merely happen to be coreferent. Secondly, (38-a) only contains one event variable e. (38-b), by contrast, comprises two event variables, e and e'. Thus, low (=VP) coordination entails event unification in the sense that both verbs hold of a *single* event. In high (=*v*P) coordination structures each verb ranges over a separate event. This consequence of the system follows from a fundamental asymmetry between the semantics of *v* and &°. *v* is combined with VP by means of event identification (8).

As a result, there is only one event that holds of all the subparts of both *v* and VP because a single event variable is applied to ⟦*v*⟧ and ⟦VP⟧. If ⟦*v*⟧ and ⟦VP⟧ contain distinct unbound event variables, they are unified at the $\overline{v}$ level. In other words, event identification, and therefore *v*, leads to event unification in the sense above. &°, on the other hand, has no such property. As defined in (21), it does not yield event identification as there is no event variable ranging over both conjuncts. Thus, event distinctions between both conjuncts are preserved at the &P level. From this asymmetry between *v* and &° it follows that VP coordination plus subsequent event identification (via *v*)—as in (38-a)—yields a single event ranging over both VPs. If two *v*Ps are coordinated, on the other hand, event identification takes place below the conjunction. There is hence no event variable ranging over the two conjuncts. Consequently, both verbs designate distinct events—as in (38-b). In sum, the differences between (38-a) and (38-b) follow directly from their structural differences that I am proposing is also responsible for the disinction between DS and SS marking.

The semantic difference between high and low coordination in (38) immediately accounts for the native speakers' judgment regarding the relation between genuine SS structures and DS structures with coreferring subjects. As noted above, SS marking yields a tight connection between both verbs. If DS marking is employed, both activities are instead interpreted as disconnected and partly unrelated. Under the present analysis, this follows as a direct consequence of the semantic asymmetry between &° and *v* along the lines suggested above. In the case of SS marking, VP coordination is employed. By the above reasoning, this yields a single event representation: Both verbs describe the same event, hence the two activities are tightly connected (38-a). DS marking, by contrast, involves *v*P coordination, resulting in a two event interpretation: Both verbs designate separate events, hence are interpreted as disconnected (38-b). Thus, the syntactic difference between both structures yields scopal relations that are empirically corroborated.

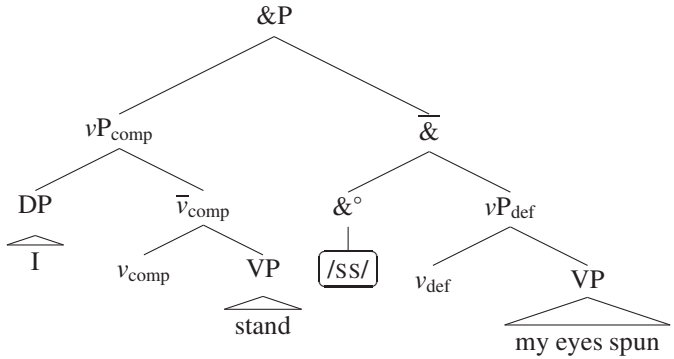
At this point, the natural question arises as to whether the denotation of &° may be subject to cross-linguistic variation. If this is the case, then some languages might interpret &° as involving event unification. In such languages, VP coordination and *v*P coordination with coreferent subjects would emerge as semantically identical. In the next section on Seri, I will argue that such languages are indeed attested. Specifically, I will argue that the semantic identity between these two structures leads to pragmatic blocking of one of them.

In sum, under the present approach, so-called 'unexpected' DS marking emerges as an entirely regular instance of the Amele switch reference system. As nothing excludes structures with high coordination and accidentally coreferring subjects, they could only be blocked by additional assumptions. This conclusion has of course only been reached because the present analysis separates DS marking from reference relations.

The last structure to be discussed for Amele is 'unexpected' SS marking. As exemplified by (16) and (18), SS marking is possible in the absence of coreferring subjects if one of the two conjuncts is a weather verb or an impersonal construction. As both do not involve agent arguments, I treat them as involving a projection of defective *v*. Consider the analysis of (18-b) (=(39)) in (40).[21]

(39) Ija ta-taw-ig ija am-i wal-do-i-a
1SG SIM-stand-1SG.SS I eye-1SG spin-3SG-3SG-TOD.P
'As I stood my eye(s) spun (= I became dizzy).'

(40) *Syntactic structure of (39)*



Only the elsewhere marker /SS/ fulfills the Subset Principle for &° as /DS/ requires the existence of two $v\mathrm{P}_{\mathrm{comp}}$. Consequently, the SS marker realizes high coordination involving impersonal constructions and weather verbs. The semantic representation is given in (41).

(41) $[\![\&\mathrm{P}]\!] = \lambda e[\textsc{agent}(\mathrm{I})(e) \wedge \textsc{stand}(e)] \wedge \lambda e'[\textsc{spin}(\textsc{my eyes})(e')]$

Notice that the DS marker is blocked in (40) only because one of the two *v*Ps is defective. Thus, if an impersonal construction or a weather verb could be made to combine with $v\mathrm{P}_{\mathrm{comp}}$, thus involving an agent, DS marking should ensue. As it turns out, causative constructions involve exactly the correct properties. Following Pylkkänen (2002, 2008), I assume that causative heads introduce a causing event, which may than receive an agent modification by projecting v_{comp}. As (19) above shows, a causative reading of the impersonal or weather verb construction leads

[21]Notice that *ija* '1SG' does not control subject agreement on the second verb (in fact, no agreement at all) but possessive agreement on *am* 'eye'. It is thus fairly clear that it is not the subject of the clause and hence irrelevant for all present purposes. It thus stands in stark contrast to the first *ija*, which behaves just as is expected for a subject.

to DS marking. As causatives involve a causer argument and therefore v_{comp}, this observation follows from the system proposed here, providing further support for it.

3.1.3. Summary

In this section I have laid out my main proposal on the basis of the Amele switch reference systems. As I have shown, the system captures a wide range of empirical observations and accounts for 'expected' and 'unexpected' SR patterns alike. Since the proposal dispenses with a direct link between morphological exponence and semantic interpretation, from the present perspective all these patterns are equally 'expected'. As nothing prohibits generating identical subjects in both *v*Ps, 'unexpected' SR marking follows as the normal state of affairs. 'Unexpected' SS marking, on the other hand, is derived by the fact that the SS marker is the elsewhere marker, showing up whenever other markers are barred from insertion. A welcome side effect of the present analysis is that it provides us with an account for why there is only one subject in SS structures: Involving low coordination, there is only one subject projected.

3.2. Seri

Having developed an account for SR marking in Amele, I will now turn to the SR system in Seri, a language isolate spoken in Mexico (Moser, 1978; Marlett, 1981, 1984; Farrell et al., 1991). The Seri SR system differs from the generalizations reached for Amele in an interesting way. I will show how the proposed analysis can be extended to cover the Seri facts as well. Doing so will illustrate how the present analysis might cope with cross-linguistic variation. In a nutshell, I will argue that there exist two loci of parametric variation. First, the coordination head may receive a different semantic interpretation, and second, the precise morphosyntactic specification of the vocabulary items that realize coordination heads are idiosyncraic and therefore subject to cross-linguistic variation. Thus, by allowing for slight variations on the semantic and morphological interfaces the theory proposed here attains enough flexibility to capture quite some range of cross-linguistic differences.

3.2.1. Empirical evidence

In Seri, DS is marked by *ta* in realis mood and *ma* in the irrealis. SS marking, on the other hand, is indicated as the absence of any overt marker. See (42) for illustrating examples.[22]

(42) a. mi-nail kom m-po-k-i:xk (*ta)-X ʔata:p
2POSS-skin the 2SG.SUBJ-IR-AUG-wet DS-UT mucus
ko-m-si-a: ʔa=ʔa
3OBL-2SG.SUBJ-IR-be AUX=DECL
'If you wet your skin, you will get a cold.'

b. ʔim-t-kašni *(ma) ʔp-yo-o:ʔa
1SG.OBJ-R-bite DS 1SG.SUBJ-DI-cry
'Since it bit me, I cried.' [Farrell et al. 1991, 434]

As (42-a) shows, if the two agents are identical, SS marking has to be used, i.e. DS marking is ungrammatical. This contrasts with Amele where, as we have seen in the previous section, such 'unexpected' DS marking is possible. If, on the other hand, the two subjects are disjoint, DS marking has to be used, as in (42-b). Thus, the Seri SR system differes from Amele in that the DS marker only appears if the two subjects are indeed disjoint in reference.

Seri is similar to Amele in that subordination structures may not be marked for SR. Furthermore, if one of the two clauses is passive or unaccusative (i.e. involving v_{def} in the present analysis), DS marking is used, as illustrated in (43). Notice that this requirement for DS marking holds independently of actual reference relations. Thus, in (43-a) DS marking has to be used in spite of the fact that the derived subject of the passive clause and the subject of the second clause are identical, adding further support for severing SR marking from reference relations.

(43) a. ʔp-po-a:ʔ-kašni *(ta)-X ʔp-si-o:ʔa ʔa=ʔa
1SG.SUBJ-IR-PASS-bite DS-UT 1SG.SUBJ-IR-cry AUX=DECL
'If I am bitten, I will cry.' [Farrell et al. 1991, 434]

b. t-om-meke ma ʔ-yo-m-asi
RL-NEG-warm DS 1SG.SUBJ-DIST-NEG-drink
'Since it wasn't warm, I didn't drink it.' [Marlett 1981, 195]

c. t-ápka ma iʔp-y-íim
DEP.PAST-rain DS 1SG.SUBJ-PAST-sleep

[22]The following abbreviations are used in the Seri data: DEP.PAST=dependent past, DI=distal realis mood/tense, IR=irrealis mood/tense, OBL=oblique, R=realis modd/tense, US=unspecified subject, UT=unspecified time.

'When it rained, I slept.' [Moser 1978, 116]

(43) establishes that DS marking is obligatory if one of the two conjuncts involves v_{def}. This differs from Amele, where SS marking is necessary in this case. Compare the weather verb construction in Amele (16) and Seri (43-c). If both conjuncts are passivized or unaccusative (hence if both conjuncts involve v_{def}), SS marking has to be used instead, as illustrated by (44). Again, SS marking appears regardless of the reference relations between the elements of the two clauses. To take an example, in (44-b) the derived subjects are *ʔa:t* 'limberbush' and *ʔe:poł* 'ratany', obviously not coreferential. Despite the lack of coreference in (44-b), SS marking is obligatory.

(44) a. ta:χ po-p-asi ʔakχ s-ka-mi:ʔ ʔa-ʔa
3PRO IR-PASS-drink somewhere IR-US-not.exist AUX-DECL
'If that is drunk, one will die.' [Marlett 1981, 196]

b. ʔa:t kiʔ p-a:ʔ-ka: (*ta)-X ʔe:poł kiʔ mos
limberbush the IR-PASS-look.for DS-UT ratany the also
si-a:ʔ-ka: ʔa=ʔa
IR-PASS-look.for AUX=DECL
'If limberbush is looked for, white ratany should also be looked for.'
[Farrell et al. 1991, 434]

The last empirical generalization to be made is that, as in Amele, SR marking stands in complementary distribution with conventional coordination marking. Thus, although the sentences in (45) clearly involve distinct subjects, the presence of the coordination *Xo* 'but' prohibits DS marking. I contend that this identical pattern found in Amele and Seri is hardly coincidental. As discussed above, deriving it becomes straightforward if SR markers *are* coordinations.

(45) a. [yoo-fp] Xo [ʔ-yo-m-aʔʔo]
PAST-arrive but 1SUBJ-PAST=NEG-see
'He arrived, but I didn't see him.'

b. [pak ʔaXXox im-askam-iʔa] Xo [pak ʔaXXoox
some shore NEG-enter-PL-TM but some shore
k-askam-iʔa]
NOM-enter-PL-TM
'Some didn't come to the shore, but others did come to the shore.'
[Finer 1985, 39]

In sum, the Seri SR systems differs from Amele in several respects. First, DS marking is impossible with identical subjects. Second, if one of the two clauses invokes v_{def}, DS marking is employed. Third, DS marking is replaced by SS marking if

both clauses involve defective *v* heads. With respect to other properties, on the other hand, the Seri facts are consistent with Amele: SR marking does not occur in subordination structures, SR marking stand in complementary distribution with conventional coordinations, and, most notably, as soon as the whole set of environments that trigger DS or SS marking is taken into account, there does not seem to exist any clear implicational relation between morphological marking and reference relations.

3.2.2. Analysis

The previous section has established that SR system in Seri shows a number of properties not found in Amele. This section aims at demonstrating how the main threads of the analysis developed for Amele can be carried over to Seri. I propose that the observed differences reduce to interface properties, i.e. the way that semantics and morphology deal with a given syntactic structure.

To anticipate the conclusion, I propose that Seri differs from Amele in just two respects: Firstly, the specification of the vocabulary items is slightly different, and secondly, the interpretation of the coordination head contains an additional event variable ranging over both conjuncts.

Consider first the vocabulary specification in (46). The only relevant difference to the set of markers assumed for Amele in (24) above is that /DS/ has a broader distribution. It not restricted to combinations of two non-defective *v*'s but rather may show up between just any type of *v*Ps.

(46) *Vocabulary items*

/DS/ ↔ [&°, *v*P__*v*P]
/SS/ ↔ [&°]
/Xo/ ↔ [&°, TP__TP]

On the semantic side of the system I suggest that Seri differs slightly from Amele in assigning the coordination head the denotation in (47).

(47) $[\![\&]\!]_{\langle\langle s,t\rangle,\langle\langle s,t\rangle,\langle s,t\rangle\rangle\rangle} = \lambda P_{\langle s,t\rangle}\lambda Q_{\langle s,t\rangle}\lambda e_{\langle s\rangle}\exists e', e''[e = e' \oplus e'' \wedge P(e') \wedge Q(e'')]$

In (47) the event variable within the conjuncts *P* and *Q* are existentially closed off. The *sum* and *join* of these two events (written as $e' \oplus e''$) then forms the event *e* which is the only open event variable at the &P level.[23] Technical details apart, the crucial difference between the Amele denotation for &° given in (21) and the Seri

[23]For general discussion of the *sum* operator '⊕', see Link (1983), Bach (1986), and Krifka (1990).

one in (47) is that in Amele there are two unbound event variables at the &P level, whereas in Seri there is only one. Recall from the discussion on page 128 that the Amele constellation led to a systematic scopal difference between VP and *v*P coordination. Because of the different denotation in (47) no such scopal difference arises in Seri. I will argue that this property of the Seri system leads to the absence of 'unexpected' DS marking.

To illustrate how this systems deals with certain coordination structures consider first VP coordination, as exemplified by (42-a), repeated as (48) below.[24]

(48) mi-nail kom m-po-k-i:xk (*ta)-X ʔata:p
2POSS-skin the 2SG.SUBJ-IR-AUG-wet DS-UT mucus
ko-m-si-a: ʔa=ʔa
3OBL-2SG.SUBJ-IR-be AUX=DECL
'If you wet your skin, you will get a cold.'

The relevant syntactic structure for (48) is (49).

(49) $[_{vP}$ *you* v $[_{\&P}$ VP^1 &° VP^2]]

As only /SS/ fulfills the Subset Principle in (49), it is inserted morphologically. Semantic interpretation proceeds straightforwardly. The denotations of *v*P and &P are given in (49).

(50) $[\![\&P]\!] = \lambda e \exists e', e''.e = e' \oplus e'' \wedge [\![VP^1]\!](e') \wedge [\![VP^2]\!](e'')$
$[\![vP]\!] = \lambda e[\text{AGENT(YOU)}(e) \wedge \exists e', e''[e = e' \oplus e'' \wedge [\![VP^1]\!](e') \wedge [\![VP^2]\!](e'')]]$

(50) asserts that there is an event e consisting of two subevents e' and e'' such that the hearer is the agent of e and the two VPs denote the respective subevents e' and e''.[25]

As a second example consider *v*P coordination, as exemplified by (42-b) (=(51)). The structure is sketched in (52).

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[24] As in Amele, VP coordination structures in Seri involve verbal marking for morpho-syntactic features that are most plausibly situated on a higher functional head. I will adopt the analysis advanced for Amele in (25), namely that spell-out of these features takes place on a lower head and percolates down to both conjuncts.

[25] Of course, (50) is not an adequate semantic form of (48) for the simple reason that (48) involves an implication. A more faithful rendering would replace the last '∧' with '→'. This seems unproblematic under present assumptions as the head &° takes the two VP propositions as arguments and may therefore define several distinct semantic relations between them, one of which is entailment. See section 4.2 for discussion.

(51) ʔim-t-kašni *(ma) ʔp-yo-o:ʔa
1SG.OBJ-R-bite DS 1SG.SUBJ-DI-cry
'Since it bit me, I cried.'

(52) $[_{\&P}\ [_{vP^1_{comp}}$ *it bit me*] &° $[_{vP^2_{comp}}$ *I cried*]]

(52) involves two complete *v*Ps with disjoint subjects. The most specific marker fulfilling the Subset Principle is /DS/, which is hence inserted. The final semantic representation is as in (53).

(53) $[\![\&P]\!] = \lambda e \exists e', e''.e = e' \oplus e'' \wedge \text{AGENT(IT)}(e') \wedge \text{BITE(ME)}(e') \wedge \text{AGENT(I)}(e'') \wedge \text{CRY}(e'')$

(53) states that there is an event consisting of two subevents, the agents of which are disjoint. In principle, nothing prevents the two agents from being coreferential. This constellation would yield DS marking with coreferent subjects, as observed in Amele. In Seri, however, this possibility is not attested (see (42-a)). Thus, there exists a systematic difference between Amele and Seri which so far does not yet fall out of the system.
In order to develop an account for the unavailability of DS marking with (accidentally) coreferring subjects in Seri compare the semantic representation for low coordination in (54-a) and for high coordination with two identical subjects in (54-b).

(54) a. *Semantics for VP coordination (e.g., (48)):*
$[\![vP]\!] = \lambda e[\text{AGENT}(\alpha)(e) \wedge \exists e', e''[e = e' \oplus e'' \wedge [\![VP]\!](e') \wedge [\![VP]\!](e'')]]$

b. *Semantics for vP coordination with two coreferent subjects (not attested):*
$[\![\&P]\!] = \lambda e \exists e', e''[e = e' \oplus e'' \wedge \text{AGENT}(\alpha)(e') \wedge [\![VP]\!](e') \wedge \text{AGENT}(\alpha)(e'') \wedge [\![VP]\!](e'')]$

According to (54-a) there is an event e with an agent α consisting of two subevents e' and e''. (54-b), by contrast, asserts an event comprising two subevents whose agents happen to be α. As for their truth conditions, (54-a) and (54-b) are identical. In order to deduce this result I take it for granted that the agent relation is *cumulative* (see Kratzer 2003 for argumentation).[26] A relation R is cumulative if the fact that R holds of an entity x at event e and of an entity y at event e' entails that R holds of the *sum* of x and y at the *sum* event of e and e'. This is defined more precisely in (55).

[26] On the notion of cumulativity see Krifka (1992, 1998).

(55) *Cumulativity* (Kratzer, 2003)
$\lambda R_{\langle e,\langle s,t\rangle\rangle} \forall e\ \forall e'\ \forall x\ \forall y\ [[R(x)(e) \wedge R(y)(e')] \rightarrow R(x \oplus y)(e \oplus e')]$

As Kratzer (2003) argued, the AGENT relation fulfills the cumulativity requirement (55). We therefore can derive (54-a) from (54-b) along the following lines. By (54-b), we know that $\text{AGENT}(\alpha)(e') \wedge \text{AGENT}(\alpha)(e'')$. By (55), this entails $\text{AGENT}(\alpha \oplus \alpha)(e' \oplus e'')$. The join operator is idempotent, hence $\alpha \oplus \alpha = \alpha$. Furthermore, by (54-b) we know that $e = e' \oplus e''$. Thus, we infer $\text{AGENT}(\alpha)(e)$, thereby arriving at (54-a) (since '$\wedge$' is associative, rebracketing is straightforward). We have thus shown that high coordination with identical subjects is semantically equivalent to low coordination in the sense that the former entails the latter. Put differently, any *v*P coordination structure with coreferring subjects may be semantically equivalently expressed via VP conjunction. The only relevant difference between the two is that in (54-b) the agent identity is accidental whereas in (54-a) it is systematic.

Based on this insight, we can now account for the ungrammaticality of *v*P coordination with coreferring subjects by adopting the reasoning initially put forward by Reinhart (1983*a*,*b*) and proposing that it is just the semantic equivalence between (54-a) and (54-b) that blocks (54-b). Reinhart (1983*a*,*b*) argues that the impossibility of a bound reading of a pronoun in cases standardly falling under Principle B of Chomsky (1981) does in fact not follow from some principle of narrow syntax or semantics. Rather, it is the mere possibility of having a bound element (i.e. an anaphora) in this position with an indistinguishable semantic representation. Thus, if a referential dependency can be systematically coded by an anaphor, it has to be. If a pronoun is used instead then the two positions are interpreted as involving disjoint reference.[27]

This reasoning carries over to the relation between (54-a) and (54-b). Here as well, two structures yield identical semantic representations. (54-a) codes agent identity in a systematic way, while in (54-b) agent identity merely follows accidentally. By parity of reasoning, the former structure blocks the latter if they are semantically equivalent. This is the case in (55). Therefore, the logic of Reinhart's approach carries over to these cases as well and provides us with an account for why Seri does not allow 'unexpected' DS marking in the way Amele does. Since *v*P coordination leads to a disjoint agent interpretation, (42-a), involving referential identity, has to be analyzed as VP coordination and therefore may only receive SS marking. This disjoint reference effect in *v*P coordinations is however not hard-wired in the

[27] For additional discussion see, e.g., Grodzinksy and Reinhart (1993) and Heim (1993).

narrow grammatical component. It is hence not necessary, in fact impossible, to render the alleged SR markers sensitive to coreference relations.[28]

The upshot of this argumentation is that accidental referential identity is blocked if it can be brought about systematically in a semantically equivalent form. This holds for Seri by the reasoning above. The requirement of semantic equivalence is, however, not met in Amele as here the denotation of (21) does not involve sum formation. Hence, as argued on page 128, VP coordination leads to event unification and the existence of only one event variable at the *v*P level. *v*P coordination, by contrast, gives rise to a representation comprising two in principle unrelated event variables, each holding of one VP. Hence, the two coordination sites do not yield semantic equivalence. It is this semantic distinctness that prevents blocking of either structure by the other.

Having implemented 'canonical' SS and DS marking as well the non-existence of 'unexpected' DS marking let us finally turn to the impact of defective *v* heads on coordination marking. The first relevant case is a combination of one defective and one non-defective *v*P. An example of this pattern in (43-a), repeated here as (56). DS marking has to be employed, regardless of coreference relations.[29]

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[28] A related line of reasoning is to trace the preference for low coordination back to its lower structural complexity. Low coordination makes use of only one *v* head while high coordination employs two such heads. If both structures yield equivalent interpretations one might take the simpler one to block the more complex one. As an approximation consider *Input Optimization* in Optimality Theory. The following definition is adapted from Prince and Smolensky (1993/2004, 225f.).

(i) *Input Optimization*
Suppose that several different inputs $I_1, I_2, \ldots, I_n$ when parsed by a grammar G lead to corresponding outputs $O_1, O_2, \ldots, O_n$, all of which are realized as the same semantic form Λ – these inputs are all *semantically equivalent* with respect to G. Now one of these outputs must be the most harmonic, by virtue of incurring the least significant violation marks: suppose this optimal one is labelled O_k. Then the learner should choose, as the underlying form for Λ, the input I_k.

While Prince and Smolensky (1993/2004) formulate (i) as referring to phonological instead of semantic equivalence they nevertheless suggest that input optimization may also block overly complex syntactic structures. Another similar proposal, at least in spirit, is Chomsky (1981) *Avoid Pronoun*.

[29] In fact, matters are slightly more complex. As noted by Farrell et al. (1991), SS marking may actually appear if the subject of the unergative is interpretated as arbitrary in reference. Compare (56) to (i).

(i) po-p-aʔit (*ta)-X si-ka-o:ʔa ʔa=ʔa
IR-PASS-eat DS-UT IR-US-CRY AUX=DECL
'If it is eaten, one will cry.'

The contrast between (56) and (i) at first glance gives the impression that subject reference after all does play a role in determining switch reference marking, in contrast to the core of the present analysis.

(56) ʔp-po-a:ʔ-kašni *(ta)-X ʔp-si-o:ʔa ʔa=ʔa
1SG.SUBJ-IR-PASS-bite DS-UT 1SG.SUBJ-IR-cry AUX=DECL
'If I am bitten, I will cry.'

The relevant syntactic structure for (56) is (57). As &° stands in the immediate environment of two *v*Ps, it is realized by the DS marker.

(57) $[_{\&P}\ [_{vP}\ v_{def}\ [_{VP}\ \textit{bite I}\ ]\ ]\ \&^{\circ}\ [_{vP}\ \textit{I}\ v_{comp}\ [_{VP}\ \textit{cry}\ ]\ ]\ ]$

Coordination of two structures that can be analyzed as invoking v_{def} entails the usage of the SS marker, as exemplified by (44-b)=(58).

(58) ʔa:t ki ʔ p-a:ʔ-ka: (*ta)-X ʔe:poł ki ʔ mos
limberbush the IR-PASS-look.for DS-UT ratany the also
si-a:ʔ-ka: ʔa=ʔa
IR-PASS-look.for AUX=DECL
'If limberbush is looked for, white ratany should also be looked for.'

If both conjuncts do not project an agent argument then VP coordination is possible as depicted in (59). Only /SS/ is attachable here.

(59) $[_{vP}\ v_{def}\ [_{\&P}\ \text{VP}\ \&^{\circ}\ \text{VP}\ ]\ ]$

A question that remains to be answered is whether in constructions involving two agentless conjuncts such as (58) DS marking is possible as well. Recall that the implementation of Reinhart's approach makes crucial use of coreference, i.e. accidental coreference is blocked if the same reading can be brought about systematically. Obviously, this reasoning does not immediately extend to cases such as (58) for the simple reason that there are no agents to which the principle could apply. Put differently, a general principle restricting reference relations does not apply to cases where there are no reference relations at all. Thus, all else being equal, the pragmatic reasoning above should not block high coordination of two defec-

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Closer inspection reveals, however, that (i) finds a principled explanation under the assumption that the arbitrary reference effect in the second clause follows because there is no agent projected to begin with. Under this account, (i) instantiates a conjunction of two VPs, followed by a single v_{def} (see below). Semantic calculation reveals the representation in (ii):

(ii) $\lambda e \exists e' \exists e''[e = e' \oplus e'' \wedge \text{EAT(IT)}(e') \wedge \text{CRY}(e'')]$

(ii) contains an event of crying, which is not associated with an agent. The arbitrary reference effect is then simply a consequence of world knowledge, much in the same way as a crying event also entails a point in time and space. None of this is however represented in the syntactic or semantic structure.

tive *v*Ps, detectable by DS marking.[30] There is indeed some indication that this is correct, as (60)—combining an unaccusative and a passivized verb—attests. Notice incidentally that DS marking is employed although the two subjects are clearly coreferent. The structure for (60) is given in (61).

(60) ʔap kiʔt-oχi ma yo-p-aʔit
deer the RL-die DS DIST-PASS-eat
'Whenever a deer died, it was eaten.' [Marlett 1981, 196]

(61) [$_{\&P}$ [$_{vP}$ v_{def} VP] &° [$_{vP}$ v_{def} VP]]

3.2.3. Summary

In this section I have laid out an analysis of the SR marking in Seri. Seri differs from Amele in several respects. First, if two subjects are coreferent, SS marking is obligatory. Second, a combination of a complete *v* and a defective *v* leads to DS marking. I have argued that these properties result from slight variations in the way the interfaces deal with a given syntactic structure. The first locus of paramatrization lies in the morpho-syntactic specification of vocabulary items. The second difference between both systems is wether coordination semantically involves the application of a join operation, thereby leading to event unification. If it does, as in Seri, low and high coordination with identical subjects result in equivalent semantic representations. By familiar reasoning put forward in independent contexts, low coordination then blocks high coordination.

3.3. Interim summary

I have developed the core of the present analysis, according to which the descriptive notion of switch reference is not mirrored theoretically in any relevant sense. Despite appearance, SR marking does not involve reference tracking. Under the perspective adopted here, the whole phenomenon is a mirage, boiling down to morphology and semantics applying independently to a certain structure but essentially blind to each other. The main thrust of the argument comes from 'unexpected' SR marking. These cases are 'unexpected' only under the misleading conception of SR as a reference tracking device. Once it is recognized that no reference relations are at stake, these patterns fall out as entirely regular and 'expected'. I take it be a con-

[30]This conclusion does not hold if the preference for low coordination over high coordination with coreferring subjects is traced back to considerations of structural complexity (see footnote 28).

ceptual virtue that the present approach does not make use of referential indices, as their theoretical status is dubious at best (cf. Chomsky, 1995). Moreover, the proposal adheres the *Inclusiveness Principle*, as it does not introduce new information during the course of the derivation. Finally, the phenomenon of SR, despite appearing 'exotic', merely reduces to the fact that the spellout of a coordination is context-sensitive in Amele and Seri while in English it is not. Underlyingly, the structures and mechanisms are identical.[31]

4. Extensions

The last section laid out my main proposal that SR reduces to the context-sensitive spellout of a coordination head on the basis of two case studies. In this section I will zoom out and tackle more general properties of SR systems and show how they relate to my core proposal. First, I will outline additional evidence that the SR marker is indeed the instantiation of a coordination head. Second, it has been commonly observed that SR markers are also systematically sensitive to the semantic relation holding between the two propositions. This fact can be easily implemented into the present analysis. Third, by the central distinction between high and low coordination, the present proposal attributes less functional structure to SS than to DS configurations. I will provide some tentative evidence that this is correct. The fourth part considers apparently problematic cases of alleged SR marking between clearly subordinate clauses. Finally, the phenomenon of switch references is related to serial verb constructions more generally. I will argue for the view that serial verb constructions are identical to SR structures with the minor difference of a zero spellout of the coordination.

4.1. SR marking and coordinations: Further issues

One piece of evidence for the claim that SR markers are the mere instantiations of coordination heads was provided by the observation that SR marking stands in complementary distribution with canonical coordinations in both Amele and Seri. This fact follows straightforwardly if these elements all compete for insertion into the same syntactic &° head. Additional evidence that this characterization is on the right track comes from the observation that often different coordinations are used depending on whether the two clauses descriptively stand in a same subject or different subject relation. Examples are given in (62) and (63). (62) exem-

[31] Also see section 4.5 for further discussion.

plifies SR marking in the Pama-Nyungan language Pitjantjatjara, (Bowe, 1990); (63) illustrates Fongbe, a Niger-Congo language also known as Fon (Lefebvre and Brousseau, 2002; Lefebvre, 2004).

(62) Pitjantjatjara
palunyalu junku junku nyangka nyuma purlkarriku ka
and-SS put-FUT put-FUT and-DS cake-ABS become.big-FUT and-DS
paalku ka jilka ngamu ngarranyjamaalpa
cook-FUT and-DS child-ABS near not.stand
'and (they) would put (it) out and the cake would spread and they would cook (it) and the children would not stand by.' [Stirling 1993, 16]

(63) Fongbe
a. Kɔ̀kú wá bɔ̀ Àsíbá yì
Koku arrive CONJ Asiba leave
'Koku arrived and-then Asiba left.'
b. Kɔ̀kú *d*ù nú bó nù sín
Koku eat thing CONJ drink water
'Koku ate and-then drank water.' [Lefebvre 2004, 125]

In both examples a coordination is sensitive to whether the two conjuncts involve a same or different subject configuration. Classic approaches to SR marking in terms of reference tracking must decide whether these elements are SR markers, coordinatoins or portemanteaus and furthmore provide diagnostics to distinguish between these elements. The present account captures these data without further ado. If SR markers are simply the spellout of coordination heads it is an arbitrary choice to gloss them either as pure SR markers, coordinations or portmanteau morphemes expressing both SR and coordination information. All three classifications boil down to notational variants of one and the same element. Thus, the present proposal avoids the pitfalls attached to deciding whether *bɔ̀* and *bó* in (63) are SR markers or coordinations. They are both, because SR markers *are* coordinations.
Further evidence for identifying SR markers with coordinations comes from the Uto-Aztecan language O'odham (Hale, 1983). In O'odham the alleged SS marker may also be used as a coordination of two nominals. This is exemplified in (64).[32]

(64) O'odham
a. Ñ 'alidag 'o gegosid g gogs c ha-'i'icud g kakawyu
my child AUX feed ART dog CONJ them-water ART horses
'My kid feeds the dog and waters the horses.'

[32] OBVAUX abbreviates for 'obviative auxiliary' and, according to Hale, signals a switch in topic.

b. Ñ-'alidag 'o gegosid g gogs k g ñ-we:nag
my-child AUX feed ART dog OBVAUX ART my-sibling
ha-'i'icud g kakawyu
them-water ART horses
'My kid feeds the dog and my brother waters the horses.' [Hale 1983, 305]

c. mi:loñ c 'u:w-hal c ha:l 'o 'e'eṣa
watermelon CONJ cantaloupe CONJ squash AUX plant:USIT
'He plants watermelons and cantaloupes and squash.' (ibid.: 300)

(64-a) and (b) show that the coordinating element varies depending on whether the two subjects are identical or not (compare *c* in the first example with *k* in the second one). They might thus equally well be glossed as SR markers. The crucial item for the present discussion is (64-c), which shows that the SS marker *c* might also conjoin nominal elements. This is a puzzling observation for all analyses that assume SR markers to code reference relations, be it directly or indirectly. It is, however, a natural state of affairs under the present treatment. In O'odham, the marker *c* is simply sufficiently underspecified to realize &° in both nominal an VP contexts.

In sum, I have offered additional arguments for the claim that SR markers are the mere realization of coordination. Evidence comes from the observation that (i) SR markers systematically stand in complementary distribution with 'conventional' coordinations, (ii) coordinations may be sensitive to SR distinctions, and (iii) the alleged SR markers may appear in coordination of nominal elements as well.

4.2. Interpropositional relations

A commonly noted property of SR systems is that the markers not only distinguish between VP and *v*P coordination (i.e. tracking reference relations in standard approaches) but furthermore often encode specific semantic relations between the two clauses. This may be illustrated by the examples in (65) from Kiowa (Watkins, 1984, 1993; McKenzie, 2007).

(65) Kiowa

a. ∅=hébà-chè èm=sáu
3SG=enter.PF=when.SS 3SG.RFL=sit.down.PF
'When she$_i$ came in, (she$_{i/*j}$) sat down.'

b. ∅=hébà-è èm=sáu
3SG=enter.PF=when.DS 3SG.RFL=sit.down.PF
'When she$_i$ came in, (she$_{*i/j}$) sat down.' [McKenzie 2007, 1f]

Table 1. Kâte switch reference markers (Payne, 2006, 301)

	OVERLAP (“while”)	SUCCESSION (“then”)
SAME SUBJECT	*-huk*	*-ra*
DIFFERENT SUBJECT	*-ha*	*-∅*

The noteworthy fact about (65) is that the respective SR markers do not only conjoin the two clauses but also restrict the range of possible relations holding between the two events to temporal overlap.

This point is even clearer in languages making use of several SS and DS markers, each of which imposes its own limitations on the interpretation space. One such system is instantiated by the Papua New Guinean language Kâte (Longacre, 1972). The set of SR markers in Kâte is given in table 1, relevant examples are provided in (66).

(66) Kâte

a. Fisi-huk na-wek
arrive-SS ate-3SG
‘As he_i arrived, he_i was eating.’

b. Fisi-ra na-wek
arrive-SS ate-3SG
‘He_i arrived, then he_i ate.’

c. Mu-ha-pie kio-wek
speak-DS-3PL weep-3SG
‘As they spoke, he was weeping.’

d. Mu-∅-pie kio-wek
speak-DS-3PL weep-3SG
‘After they spoke, he wept.’ [Payne 2006, 301]

(66-a,b) contain distinct SS markers, each defining its own temporal relation between the two clauses. An analogous contrast is observed for DS marking in (66-c,d).

As a matter of fact, systems invoking several SS and DS markers can grow quite complex. Consider for illustration the facts of the Caribean language Panare as summarized in table 2 (cf. Payne, 1991, 2006).

The same state of affairs is also attested *inter alia* in Pitjantjatjara, Tundra-Yukaghir (Syberia; Maslova 2003), Eastern Promo (McLendon, 1975), and Cashinahua (Panoan; Montag 2005).

The present system straightforwardly extends to such cases as well. If, as I argue, the SR markers spell out a syntactic head that takes two propositions (or, more precisely, functions from events into truth values) as arguments, one may enrich

Table 2. Panare switch reference markers (Payne, 2006, 302)

Morpheme (verb suffix)	Temporal relation	Reference relations	Other relations expressed
-séjpe	Succession	Actor=Actor	purpose
-sé'ñape	Succession	Absolutive=Patient	result
-ñépe	Succession	Actor≠Actor	movement/purpose
-npan	Overlap	Actor=Actor	none
-tááñe	Overlap	Actor≠Actor	none
-jpómën	Anteriority	Actor=Actor	reason

the semantics of this head by defining relations over the two propositions. This move is unproblematic as the present analysis treats SR markers as belonging to neither of the two clauses but rather constituting the glue that links them together. For illustration, consider the Kâte system in table 1 above. Suppose now that the basic meaning of the coordination head is as in Seri (see (47)). To account for the Kâte facts, all that is necessary is to distinguish two coordination heads, each of which specifies the temporal relation between the two subevents in a different way, as in (67). (67-a) semantically requires the two elements to take place at the same time ($t_{e'} = t_{e''}$), while (67-b) entails temporal succession of the two events ($t_{e''} > t_{e'}$). Both heads may than freely combine with two VPs or *v*Ps, giving rise to the four cases in (66).[33]

[33] '$t_{e''} > t_{e'}$' reads as 'e'' takes place at an earlier point in time than e''. Notice that P corresponds to the complement (i.e. the constituent which combines first with &°); Q is the specifier of &°. Therefore, the ordering has to be $t_{e''} > t_{e'}$ rather than the reverse.

The join operator '⊕' is necessary here because the events described by the two VPs need to be temporally ordered and hence have to be distinguishable. An immediate implication of the join operator is that *v*P coordination with coreferent subjects leads to a semantic representation that can equally well be achieved by VP coordination (recall the reasoning on page 137). This leads us to predict that Kâte does not allow DS marking with identical subjects.

For the sake of illustration, (i) summarizes the resulting semantic representations for the four cases at hand.

(i) a. $[_{vP}\ \alpha\ [_{\&P}\ \mathrm{VP}_1\ \&_1\ \mathrm{VP}_2\ ]\ ]$ (=(66-a)):
$[\![vP]\!] = \lambda e[\textsc{agent}(\alpha)(e) \wedge \exists e', e''[e = e' \oplus e'' \wedge [\![\mathrm{VP}_2]\!](e') \wedge [\![\mathrm{VP}_1]\!](e'') \wedge t_{e'} = t_{e''}]]$

b. $[_{vP}\ \alpha\ [_{\&P}\ \mathrm{VP}_1\ \&_2\ \mathrm{VP}_2\ ]\ ]$ (=(66-b)):
$[\![vP]\!] = \lambda e[\textsc{agent}(\alpha)(e) \wedge \exists e', e''[e = e' \oplus e'' \wedge [\![\mathrm{VP}_2]\!](e') \wedge [\![\mathrm{VP}_1]\!](e'') \wedge t_{e''} > t_{e'}]]$

c. $[_{\&P}\ [_{vP}\ \alpha\ \mathrm{VP}_1\ ]\ \&_1\ [_{vP}\ \beta\ \mathrm{VP}_2\ ]\ ]$ (=(66-c)):
$[\![\&P]\!] = \lambda e \exists e', e''[e = e' \oplus e'' \wedge \textsc{agent}(\alpha)(e') \wedge [\![\mathrm{VP}_2]\!](e') \wedge \textsc{agent}(\beta)(e'') \wedge [\![\mathrm{VP}_1]\!](e'') \wedge t_{e'} = t_{e''}]$

d. $[_{\&P}\ [_{vP}\ \alpha\ \mathrm{VP}_1\ ]\ \&_2\ [_{vP}\ \beta\ \mathrm{VP}_2\ ]\ ]$ (=(66-d)):
$[\![\&P]\!] = \lambda e \exists e', e''[e = e' \oplus e'' \wedge \textsc{agent}(\alpha)(e') \wedge [\![\mathrm{VP}_2]\!](e') \wedge \textsc{agent}(\beta)(e'') \wedge [\![\mathrm{VP}_1]\!](e'') \wedge t_{e''} > t_{e'}]$

(67) *Coordination heads in Kâte*

a. $[\![\&_1]\!] = \lambda P_{\langle s,t\rangle}\lambda Q_{\langle s,t\rangle}\lambda e_{\langle s\rangle}[e = e' \oplus e'' \wedge P(e') \wedge Q(e'') \wedge t_{e'} = t_{e''}]$

b. $[\![\&_2]\!] = \lambda P_{\langle s,t\rangle}\lambda Q_{\langle s,t\rangle}\lambda e_{\langle s\rangle}[e = e' \oplus e'' \wedge P(e') \wedge Q(e'') \wedge t_{e''} > t_{e'}]$

Each of the four conceivable combinations is then morphologically realized by a specific marker, given in (68).

(68) *Vocabulary items for Kâte*

/huk/ ↔ [$\&_1$, VP __ VP]
/ha/ ↔ [$\&_1$, *v*P __ *v*P]
/ra/ ↔ [$\&_2$, VP __ VP]
/∅/ ↔ [$\&_2$, *v*P __ *v*P]

The present proposal thus extends to cases of interpropositional relations by enriching the set of available syntactic heads. Each of these heads may then receive a specific semantic interpretation and a designated spellout, thereby yielding the observed sensitivity of the SR markers to interclausal relationships. I have developed an explicit proposal for Kâte and by the same reasoning analogous systems may be developed for other languages as well.

4.3. Asymmetries in functional structure

A predication that sets apart the present conception of SR from the majority of previous treatments arises from the assumption that SS constructions, by involving only one *v* head, comprise less functional structure than DS configurations, which project two separate *v*'s. As *v* is standardly assumed also to enter into Agree relations, we expect there to exist languages without verbal ϕ-agreement in SS constructions, but with such agreement in DS constructions. This pattern has in fact already been encountered in the Kâte data in (66), and is furthermore attested in Kewa (Franklin, 1983), Lenakel (Lynch, 1983), Ono (Gordon, 1983), and Ancash Quechua (Cole, 1983).

The overarching pattern in the Kâte data in (66) above is that if SS marking is employed, only the final verb codes subject agreement. If DS marking is used, both verbs inflect for ϕ-features. This is expected under the assumption that it is *v* that agrees with the subject and into which morphological insertion takes place. As VP coordination (thus, SS marking) structures involve only one *v*, agreement is spelled out only once. DS marking, by contrast, is analyzed as *v*P coordination, thus comprising two separate *v*'s.[34]

[34]In various other languages, such as Amele and Seri, SS and DS structures are not differentiated

Importantly, to the best of my knowledge the opposite pattern—more morphological marking in SS than in DS constructions—is not attested. This follows straightforwardly from present assumptions as DS marking invokes more functional material than SS marking.

A related point concerns the general observation that SS-marked clauses generally contain only one subject. Given that external arguments are introduced by a functional head (as has been assumed throughout this paper), this observation is traced back to the same asymmetry. VP coordination contains only one *v* head, hence projects only one agent.

4.4. Coordination versus subordination

Classical approaches to SR such as Finer (1984, 1985) rely on the binding theory as their theoretical tool. Since the binding principles as proposed by Chomsky (1981) crucially involve c-command as the central structural relation, it is often assumed in analyses of switch reference that c-command holds between the two clauses. This standpoint is also adopted in the Agree-based implementation of Watanabe (2000) because Agree as well presupposes c-command. In an explicit reply to Finer (1985), Roberts (1988) demonstrates that in Amele SR marking is attested in structures not involving clausal subordination. The present analysis has the far-reaching implication that SR marking may not only occur in coordinate constructions but is in fact confined to them. It thus makes the strong claim that SR marking does not appear in cases of clausal subordination. In this section, I will argue that there is indeed tentative evidence that SR is restricted to coordination structures. The crucial evidence comes from structures unambiguously involving subordination. These cases show an empirical behavior different from SR marking and arguably involve logophoricity.

Recall at the outset that there exist structures involving SR marking that empirically do not pattern with subordinate constructions. This was the case in Amele and Seri. Furthermore, SR marking is blocked from subordination structures in these two languages. So at least in some languages, SR marking is clearly restricted to non-subordination constructions.

Instances of alleged adjunction constructions do not argue against the present approach, given that specific propositional relations between the two sentences may

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along these lines. This identity in morphological marking can be implemented by dissociating the locus of the syntactical Agree operation from the point of morphological exponence, i.e. by a morphological lowering operation, which—by the general symmetry requirement on conjunctions—affects both conjuncts. See the discussion on page 122.

be implemented as suggested in section 4.2: Since the coordination head takes two propositions as arguments, it may contribute the additional semantic relation. No adjunction structure *per se* is necessary to accomplish this.[35]

In order to establish the point whether SR marking is possible in subordination structures or not, one needs to examine unambiguous cases of subordination, i.e. cases where one of the two clauses stands in the scope of an element of the other clause. If such a scope relation is fulfilled it is evident that the two clauses cannot simply be coordinated.

I will proceed by briefly describing the SR system in Imbabura Quechua (Cole, 1982, 1983; Jake, 1983; Hermon, 1985, 2001). Imbabura Quechua has been claimed to involve SR marking in both coordinated as well as subordinated constructions (cf., e.g., Cole, 1983). Following Stirling (1993), I will argue that the apparent SR marking is subject to fundamentally different principles in both cases. The conclusion to be drawn is that in subordinate structures logophoricity is at work, hence 'real' reference tracking.

Coordinate structures in Imbabura Quechua use the SS marker *-shpa*; DS is marked by *-jpi*. Consider the examples in (69).

(69) a. Utavalu-man chaya-shpa, ñuka mama-ta riku-rka-ni
Otavalo-to arrive-SS my mother-ACC see-PAST-1
'When I arrived in Otavalo, I saw my mother.'

b. Juzi Utavalu-man chaya-jpi, paypaj wasi-man ri-rka-ni
José Otavalo-to arrive-DS his house-to go-PAST-1
'When José arrived in Otavalo, I went to his house.' [Cole 1983, 5]

Given that subjunctive mood indicates subordination, the set of data in (70) seems to suggest that SR marking also holds in subordinate constructions.

(70) a. Utavalu-man shamu-rka-ni ñuka mama-ta
Otavalo-to come-PAST-1 my mother-ACC
visita-ngapaj
visit-SS.SUBJUNCTIVE
'I came to Otavalo to see my mother.'

b. Juzi-ta Utavalo-man kacha-rka-ni paypaj mama-ta
José-ACC Otavalo-to send-PAST-1 his mother-ACC
visita-chun
visit-DS.SUBJUNCTIVE
'I sent José to Otavalo to see his mother.' [Cole 1983, 6]

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[35]Munn (1993) treats coordination as phrase-structurally identical to adjunction. Under this view, constructions involving adjunction do of course not pose an argument against a coordination analysis.

Notice first that a different set of markers is employed in (69) and (70). Whereas in (69), SR is marked by *-shpa* and *-jpi*, respectively, in the subordination structures (70)-*ngapaj* and *-chun* are used. More important is the fact that the closely related language Ancash Quechua has SR marking only in the former environment and not in subordination structures (Cole, 1983, 3). This is a first hint that the two constructions are sufficiently distinct to deactivate them separately.
Upon closer scrutiny, it turns out that despite the appearance in (70) the alleged subjunctive SR markers *-ngapaj* and *-chun* differ from *-shpa/-r* and *-pti* in crucial respects. To appreciate this observation, consider (71).

(71) Imbabura Quechua

a. ali-mi [{∅/ñuka/kan/*pay} Juzi-wan parla-ngapaj]
good-EVID {∅/I/you/*he} José-with speak-SS.SUBJUNCTIVE
'It is good that one/I/you/*he speak with José.'

b. ali-mi [{pay/∅/*ñuka/*kan} Juzi-wan
good-EVID {he/∅/*I/*you} José-with
parla-chun]
speak-DS.SUBJUNCTIVE
'It is good that he/*one/*I/*you speak with José.' [ibid.: 6f]

(71-a) shows that in subordination structures *-ngapaj* may be used if the subject of the embedded clause is first or second person or arbitrary in reference. The marker *-chun*, on the other hand, indicates that the subject is referentially dependent on another argument, as illustrated by (71-b). Witness also that the 'same subject' marker *-ngapaj* in no sense encodes subject coreference as the embedded clause is the sole argument of the matrix predicate *ali* 'good'.
A suitable pair to make clear the differences between subordinate and coordinate structures is provided by (72) and (73). While (72) illustrate the range of possible interpretations for the subjunctive, (73) shows the same for coordinate structures.

(72) SUBORDINATION

a. wawa-ka mama mikuchiy tukushka-mi [ama
child-TOP mother fed became-EVIDENTIAL not
{∅/ñuka/kan/*Juzi} kijari-ngapaj]
{∅/I/you/*José} complain-SS.SUBJUNCTIVE
'The child$_i$ was fed by the mother in order that one/he$_i$/I/you/*José not complain.'

b. wawa$_i$-ka mama mikuchiy tukushka-mi [ama
child-TOP mother fed became-EVID not
{Juzi/*pay$_i$/*ñuka/*kan} kijari-chun]
{José/*he/*I/*you} complain-DS.SUBJUNCTIVE
'The child$_i$ was fed by the mother in order that José/*he$_i$/*I/*you not complain.'

(73) COORDINATION
{ñuka/kan} mana wasi-pi ka-{jpi/*shpa} wawa-ka mama mikuchiy
{I/you} not house-in be-{DS/*SS} child-TOP mother fed
tukushka-mi
became-EVIDENTIAL
'While I/you was/were not in the house, the child was fed by the mother.'
[Cole 1983, 8f]

(72-a) attests that subjunctive SS marking is possible not only if the two subjects are coreferent but also if the second subject is interpreted arbitrarily and even if it is first or second person. Conversely, subjunctive DS marking is not available even if the first subject is third person and the second subject first person, as shown by (72-b). This is not only surprising from the point of view of SR marking in general, it is furthermore evidently distinct from non-subjunctive SR marking. As (73) attests, the combination of a third person and a first/second person subject may only lead to DS marking in coordinate structures, in stark contrast to (72).
It is clear from this cursory overview that the alleged SR markers in coordinate and subordinate structures are subject to a considerably different distribution. Subjunctive SR marking in Imbabura Quechua does not behave as SR marking generally does and even within a single language is sufficiently different empirically to necessitate a distinct treatment at some level of analysis. The conclusion I draw from this is that there exists no SR marking in subjunctive clauses. In other words, the mechanisms leading to marking by *-shpa/-r* and *-jpi* on the one hand and *-ngapaj/-chun* on the other are unrelated. Only coordination structures involve SR marking. Subordination, by contrast, seems to encode logophoricity (Sells, 1987). Clauses involving logophoric subjects are thus marked by *-ngapaj*, while other subjunctive clauses bear *-chun*. Its relation with SR marking is only a remote one. The subject of the first clause may act as logocentric with the effect that logophoric bounding may take place in same subject environments as in (70). It is, however, not restricted to these environments and also appears with inherently logocentric first

and second person DPs. This sets it apart from SS marking, which is restricted to identical subjects (cf. (73)).[36]

The conclusion to be reached from this discussion is that apparent instances of switch reference marking in subordinate clauses may be misleading and not involve SR at all. The crucial piece of empirical evidence for this claim is that the markers in the two environments are subject to quite different distributional patterns. Needless to say, it may very well turn out that the facts observed in Imbabura Quechua are not representative. Further typological evaluation of this claim is, however, beyond the scope of this paper.

4.5. Serial verb constructions

Recall from section 3.1 that switch reference markers in Amele occur in serial verb constructions. A natural question to be raised in this context is how this account relates to verb serialization more generally, viz. instances of verb series without SR marking. The zero hypothesis in light of the present account is that such constructions as well involve coordination with the superficial difference that the coordination head is left unpronounced.

(74), taken from Saramaccan, a creole language spoken in Suriname (Veenstra, 1996), illustrates verb serialization without SR marking.

(74) Saramaccan
A sindjó nján
3SG sit.down eat
'He sat down and ate.' [Muysken and Veenstra 2006, 235]

More generally, in their survey of verb series Muysken and Veenstra (2006, 238) note that there may exist only one grammatical subject. Furthermore, only one tense/aspect specification is allowed for the two (or more) verbs, which may appear on either verb or on both verbs simultaneously, then obligatorily agreeing. These properties are immediately accounted for once it is assumed that verb serialization, like SS marking structures, involve VP coordination.

An important argument against a coordination analysis of verb series is due to Jansen et al. (1978) and Sebba (1987). They show that serial verb constructions allow asymmetric extraction as illustrated in (75). As Ross (1967) *Coordinate Struc-*

[36]For discussion of further difference between SR marking and logophoricity as well as on how to distinguish between the two, see Stirling (1993, 50-56,ch.6).

ture Constraint prohibits asymmetric extraction out of coordination structures, so the argument goes, verb series may not be analyzed as coordination.

(75) Saramaccan

a. andí$_i$ a téi t$_i$ kóti dí beée?
what 3SG take cut DET bread
'What did he cut the bread with?'

b. andí$_i$ a téi dí fáka kóti t$_i$?
what 3SG take DET knife cut
'What did he cut with the knife?' [Muysken and Veenstra 2006, 258]

It has, however, long been noticed that there are exceptions to the Coordinate Structure Constraint even in English. Particularly revealing in the present context are instances of so-called *pseudo-coordination* such as (76).[37]

(76) What$_i$ did John go to New York and buy t$_i$?

It has been argued by de Vos (2005) and Harris (2011) that cases as (76) involve regular coordination. Following Harris (2011), the crucial property allowing asymmetric extraction is that coordination applies low, i.e. at the VP or V level. If this analysis is on the right track, asymmetric extraction from conjuncts is possible if the conjoined structure is sufficiently small. In light of the present account, serial verb constructions involve VP coordination. Thus, from the present point of view the extraction pattern found in (75) is not only no counter-argument against a coordination analysis but is even expected to hold in light of the English (76).[38]

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[37]While (76) contains a verb of movement in the first conjunct, asymmetric extraction does not appear to be restricted to them. Other relevant examples are given in (i) (Lakoff, 1986).

(i) a. How much can you drink and still stay sober?
b. That's the kind of firecracker that I set off and scared the neighbors.

[38]Conflating English pseudo-coordination and verb series of course also leaves questions open. In English pseudo-coordination structures, such as (76), extraction is only possible from the final conjunct whereas in verb series both conjuncts are transparent for movement. Notice first that this restriction does not extend to the cases mentioned in the last footnote. Furthermore, as discussed by Muysken and Veenstra (2006), cases of apparent extraction from non-final conjuncts might by accommodated by assuming (i) that there exists a null operator in the final conjunct, and (ii) that movement applies in an Across-the-Board fashion. Thus, the structure for (75-a) would be as in (i) (where 'ec' = empty category).

(i) WH$_i$ [$_{VP_1}$ V ec$_i$] [$_{VP_2}$ V ec$_i$ XP]

For further discussion see Muysken and Veenstra (2006) and references cited there. Also see Larson

A second consequence of the unified approach to switch reference and verb series now emerging is that it is no longer puzzling why verb series, if indeed involving coordination, never realize this coordination overtly. From the present view, this property arises as a consequence of idiosyncratic classification. I contend that the coordination *can* receive overt spellout. In this case, however, the construction as a whole is termed 'pseudo-coordination' (if the spell-out is context-insensitive) or 'switch reference' (if sensitive to its context) and then commonly treated as a phenomenon unrelated to verb series. Against the background of the analysis pursued here I suggest that this division is of no theoretical significance. Underlyingly, verb serialization, pseudo-coordination, and switch reference are one and the same. Differentiation only takes place on the morphological side. These differences boil down to idiosyncratic marker specifications and are ultimately superficial. In short, then, verb serialization is just switch reference with the switch reference markers left out.

While the prospect of unifying switch reference and serial verb constructions in general has some appeal to it, I hasten to emphasize that the literature has unearthed various properties of verb series that are not readily accomodated within such a view (cf., e.g., Baker, 1989; Collins, 1997, 2002; Aboh, 2009). The data discussed by these authors suggest that at least some serial verb constructions differ systematically from covert coordination structures. Of course, the present proposal leads one to expect that the coordination head conjoining to verbal projections may also be silent, but that does not entail that all instances of verb serialization must be implemented in such a way. It is thus perfectly conceivable that (a subset of) verb series is best treated along altogether different lines. Evaluating this proposal would lead us to far afield and I will leave this matter for future research.

4.6. Section summary

This section has explored some consequences of the view are SR markers are the spellout of coordination heads. I have argued that SR markers are commonly observed to associate with coordinations and that, furthermore, SR markers may constitute coordinating elements even in the nominal domain. A second advantage of the view developed here is that one can easily implement cases of SR markers specifying distinct semantic relations between the two events. Thirdly, the view that DS and SS structures differ in their amount of functional material captures an asymmetry with respect to verbal agreement and the fact that subjects are only realized

(2003) for potentially relevant Norwegian cases that allow extraction from either of the two conjuncts as well as various similarities between serial verb constructions and coordinations.

once in SS configurations. I have also raised the point that cases of switch reference in true subordination structures are doubtful at best. A case study of Imbabura Quechua has revealed that the mechanisms at work in coordination and subordination constructions are sufficiently diverse to warrant treating them as separate phenomena. If these results are on the right track, apparent SR marking in subordinate structures may generally be an instance of logophoricity. Needless to say, more work is necessary to establish this point more firmly. Finally, I considered the relation between switch reference and verb serialization. I have reached the conclusion that both constructions are syntactically identical, with only minor differences regarding the phonological realization of the coordination head. Furthermore, I have touched upon the question of whether the present analysis may be extended to verb series more generally. This matter is of course an empirical one and the exact boundries of the proposal remain to be established.

5. Concluding remarks

In this paper I have proposed a new perspective on switch reference systems. In contrast to standard approaches, which—despite their theoretical difference—stick to the generalization that the appearance of the switch reference markers is tied to reference relations, I have explored some of the consequences of reducing these markers to the mere context-sensitive spell-out of a coordination head. Having thus eliminated any direct link between morphological marking and semantic interpretation, semantics and morphology only correlate with each other in virtue of the fact that both operate on the same syntactic structure. As a consequence, the connection between both is rather loose, a prediction that I take to be corroborated by the widely observed instances of 'unexpected' switch reference marking. On the empirical side, the present view puts considerably emphasis on these cases of so-called 'unexpected' switch reference marking. While deviant in previous approaches, they now emerge as entirely regular instantiations of a more abstract system. Conceptually, the analysis has the welcome side-effects of handling the data without global computation, as no reference comparison between two nominals takes place. It is hence compatible with a phase-based notion of locality. Furthermore, it does not involve binding indices or some equivalent means since no syntactic principle imposes restrictions on reference relations, thus adhering to the Inclusiveness Principle. Differences between Amele and, say, English only arise through the interfaces. Underlyingly, the structures and mechanisms at work are identical.

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Is there Switch-Reference Marking in Coordinated Clauses?

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Abstract

The question of whether there are languages which exhibit switch-reference marking in coordinated clauses has emerged to be a very important one for the whole topic of switch-reference and interclausal dependencies. In this paper, I examine all languages claimed to have switch-reference marking in coordinated clauses in detail. I will show that in all languages in question switch-reference marking behaves totally identical with respect to three independent parameters. I argue that this is not a coincidence and can be nicely explained by assuming that what looks like switch-reference marking in these languages is in fact a completely different phenomenon, namely tight and loose coordination. Hence, I argue that the question raised in the title of this paper is to be answered with "no".

1. Introduction

The literature on switch-reference is characterized by an ongoing debate about the syntactic contexts in which switch-reference is attested and the ones in which it is not. Not long after Finer (1984, 1985) published his ground-breaking works on the topic, there have been several replies that his empirical generalizations are not borne out cross-linguistically. Finer (1984, 1985) analyzes cases of switch-reference as instances of syntactic binding mediated by some syntactic head at the top of the embedded clause. Against the background of this theory, he claims that switch-reference only occurs in subordinate clauses, more precisely in adverbial subordinate clauses. Finer is not entirely explicit about whether he thinks that SR also occurs in subordinate complement clauses or not, but he explicitly claims that there is no SR relation in coordinated clauses. This claim has provoked several replies arguing for the contrary. In a series of articles about the Pama-Nyungan language Amele, Roberts (1987, 1988*a*,*b*) claimed that clause chains in

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Amele, which exhibit switch-reference marking, rather resemble coordinate structures. Nevertheless the binding approach to switch-reference was further pursued by Broadwell (1997) and Watanabe (2000). The former argues on the basis of data from Chichewa and Choctaw that although the constructions may share several properties with coordinated clauses, they can be uniformly analyzed as instances of clause-chaining. Broadwell argues that clause-chaining involves a c-command relation and may thus be captured by the binding approach adopted by Finer. Thus, the line of argumentation adopted by those who followed the binding approach was to reanalyze data which looked like coordination as instances of clause-chaining. However, recent literature (Stirling (1993) and especially McKenzie (2007, 2010, 2011)) has discussed several cases which look like instances of SR and which can hardly be reanalyzed as clause-chaining. Hence, the question is whether the binding approach should be rejected on the basis of these data. In this article I contribute to this discussion by taking a closer look at all the examples which appear to be clear instances of SR marking in coordination. I will depart from Broadwell's line of argumentation in that I am not going to argue that these data have to be reanalyzed as clause-chaining. Nevertheless, I will show that none of the examples should be analyzed as instances of switch-reference at all because they differ from other cases of switch-reference with respect to several properties. Hence, I will argue that what we are dealing with in these languages is a totally different phenomenon. The second section revisits the aforementioned discussion about the syntactic contexts of switch-reference. In the third section, I take a closer look at the problematic data which were used as an argument against the binding approach. The fourth section discusses the findings of the previous section and argues for the conclusion that these cases are not to be treated as instances of SR at all. In section six I discuss how these languages should be analyzed. The last section briefly restates the theoretical consequences of my argumentation.

2. Previous accounts of Switch Reference

The question of whether switch-reference (SR) marking is attested in clear cases of clausal coordination (i.e. coordination of two CPs) has emerged to be a decisive one for the whole topic. To see why, we have to take a look at some previous accounts.

As already mentioned, one of the first works on the topic of SR and probably the most influential one is Finer (1984, 1985). He was the first one to discuss examples like (1) from a theoretical perspective.

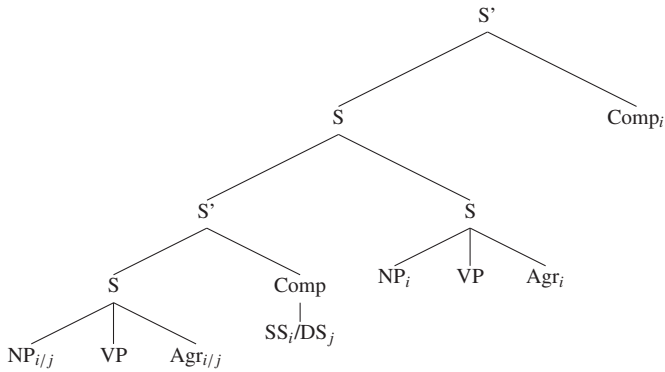
(1) *Mojave (Munro 1980:145)*

a. nya-isvar-k iima-k
when-sing-SS dance-Tns
'When he$_i$ sang, he$_i$ danced.'

b. nya-isvar-m iima-k
when-sing-DS dance-Tns
'When he$_j$ sang, he$_i$ danced.'

The marking of the verb in one clause depends on whether its subject is identical with the subject of another clause. If it is identical, Same-Subject-Marking (SS) is used, if not, Different-Subject-Marking (DS) is used. According to Finer, this long distance dependency can be accounted for by means of binding theory. He proposes that the switch-reference marker can either be a bound anaphor (in the case of a same subject relation) or an unbound pronominal (in a different subject relation), both located in the Comp-position of the embedded clause respectively.

(2)



The subject NP of both clauses agrees with its Agr-head and since the Agr-head itself also agrees with the Comp-head, both subject NPs agree with the Comp-head by transitivity. Now, if the Comp-head of the embedded clause is an anaphor, it must be bound in its governing category, if it is a pronominal, it must not be. In other words, an SS morpheme must be c-commanded[1] by the Comp-head of a higher clause, an DS morpheme must not be.

Thus, Finer's whole approach is highly dependent on whether there is a c-command relation between all elements involved. The Agr-head (Infl) must c-command the subject, the Comp-head must c-command the Agr-head and, most

[1]Finer draws on a definition of c-command by Belletti & Rizzi (1981) which would nowadays be called m-command

importantly, the Comp-head of the matrix clause c-commands the Comp-head of the embedded clause. Hence, Finer tries to show that there is a c-command relation in all the languages he examined. He claims that in all the examples of his works, the marked clause (i.e. the clause that contains the SR morpheme) is subordinate because in the context of subordination, the c-command relation holds. To be more precise, he claims that examples like (1) all involve adverbial subordination.
However, this claim was attacked by different authors, among them, most prominently, Roberts (1988*b*,*a*).[2] Roberts argues for the fact that in Amele, the language he studies, the so-called clause chain construction which exhibits cases of SR resembles classic coordination rather than subordination. His main arguments involve word order and cataphoric reference. With respect to the latter, one can observe that, in the clause chaining construction in (3-c) it is not possible to have a pronoun with a cataphoric reference to a noun phrase in the second clause. In the coordination example (3-a), this is impossible as well, however, in subordinated contexts such a pronoun may have a cataphoric reference (3-b).

(3) Cataphoric Reference in Amele Roberts (1988b:56f)

a. *Uqa$_i$ ho-i$_i$-a qa Fred$_i$ sab qee
3.SG come-3.SG-TOD.PAST but Fred food not
je-l-∅$_i$
eat-NEG.PAST-3SG
'He$_i$ came but Fred$_i$ did not eat the food'

b. Uqa$_i$ sab j-igi$_i$-an nu Fred$_i$ ho-i$_i$-a
3.SG food eat-3.SG-FUT for Fred come-3.SG-TOD.PAST
'Fred came to eat food'

c. *Uqa$_i$ bil-i-me-i$_i$ Fred$_i$ je-i$_i$-a.
3.SG sit-pred-3.SG-SS Fred eat-3.SG-TOD.PAST
'He$_i$ sat and Fred$_i$ ate'

As for word order, one can observe in Amele that clause chain constructions are sequentially fixed, i.e. the order of all clauses within a clause chain is invariable.

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[2]Other researchers who have claimed that a certain language exhibits SR marking in coordinate clauses are Lynch (1983) for Lenakel and Langdon and Munro (1979) for Yuman languages. However, for Lenakel, it has been shown (e.g. Moyse-Faurie and Lynch (2004), McKenzie (in prep.)) that there is a different phenomenon at work which has been called *echo-subject*-agreement. With Yuman languages, the situation is still unclear since Langdon and Munro (1979) do not give any reliable tests to distinguish subordination and coordination, not to mention cosubordination (=clause-chaining). However, see also Gordon (1983) on Maricopa, a Yuman language, for which he shows that all SR marked clauses are in fact subordinate.

The same applies to coordinated clauses. Subordinate clauses, however, can appear before and after the matrix clause.

(4) Subordination Roberts (1988b:55f)

a. Ija ja hud-ig-en fi uqa sab man-igi-an
1.SG fire open.-1.SG-FUT if 3.SG food roast-3.SG-FUT
'If I light the fire she will cook the food'

b. Uqa sab man-igi-an ija ja hud-ig-en fi
3.SG food roast-3.SG-FUT 1.SG fire open.-1.SG-FUT if
'She will cook the food if I light the fire '

(5) Coordination

a. Ija ja hud-ig-a qa uqa sab mane-i-a
1.SG fire open.-1.SG-FUT but 3.SG food roast-3.SG-TOD.PAST
'I lit the fire but she cooked the food'

b. *Uqa sab mane-i-a ija ja hud-ig-a fi
3.SG food roast-3.SG-TOD.PAST 1.SG fire open.-1.SG-TOD.P if
'I lit the fire but she cooked the food'

(6) Clause Chaining

a. Ho busale-ce-b fi dana age qo-qag-an
pig run.out-DS-3.SG if man 3.PL hit-3.PL-FUT
'If the pig runs out, the men will kill it.'

b. *Dana age qo-qag-an ho busale-ce-b fi
man 3.PL hit-3.PL-FUT pig run.out-DS-3.SG if
'The men will kill it if the pig runs out, '

With respect to both phenomena, clause chains behave like coordinated clauses and unlike subordinated ones. However, strictly speaking, both asymmetries between subordination on the one hand and clause chaining and coordination on the other only show that the clause chaining construction differs from prototypical cases of subordination.

Broadwell (1997) weakens the claim of Finer (1985) in that he acknowledges that cases of clause chaining are no cases of prototypical subordination. However, he argues on the basis of data from Chichewa and Choctaw that clause chaining constructions are neither clear cases of subordination nor clear cases of coordination. Rather they exhibit properties of both clause linkage types. But, as Broadwell argues, clauses within a clause chain do allow a c-command relation between the head of the clause chain and the subsequent matrix clause. This is illustrated by the fact that there is no Coordinate Structure Constraint effect for clause chains (7-a). However, with real coordination, we find a violation of the Coordinate Structure

Constraint (7-b). The same asymmetries can be found in clause chaining constructions of Papuan languages (8).

(7) Extraction in Choctaw Broadwell (1997:11)

a. Katah-oosh$_i$ John-at taloowa-na t$_i$ hilhah?
who-FOC:NOM John-NOM sing-DS t dance
'Who$_i$ did John$_j$ sing and t$_i$ dance?'

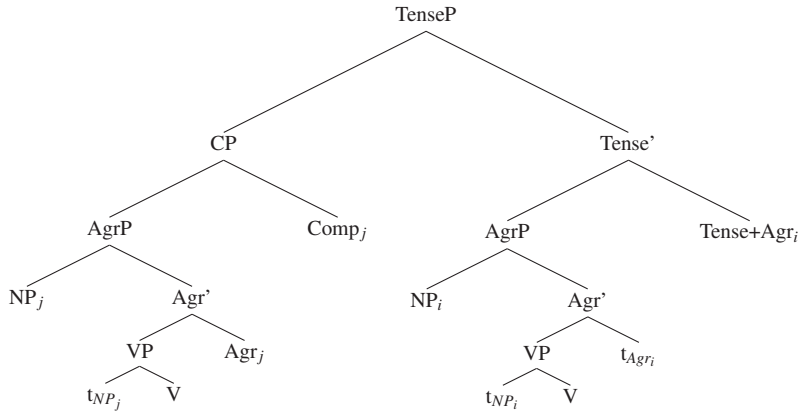
b. *Katah-oosh$_i$ John-at taloowa-tok anoti t$_i$ hilha-tok?
who-FOC:NOM John-NOM sing-PAST and t dance-PAST
'Who$_i$ did John$_j$ sing and t$_i$ dance?'

(8) ne-ni we tu-a-te yau-i=ne?
3.SG-ERG who.NOM give-3.SG-DS see-3.PL=Q
'Whom did he give it? and they saw him' (='Whom did he give it as they saw him?')

Tauya (Papuan) McDonald (1990)

Movement dependencies like in (7-a) are generally thought to involve a c-command relation between the trace and the landing site of a moved constituent and hence, clause chains in Choctaw must be c-commanded by the subsequent clause. In the more recent literature about clause chains (see Dooley (2010a,b) and references cited therein), the fact that extraction from one clause out of a clause chain does not yield a CSC violation has become a defining criterion for the construction as such. Hence, it seems to be uncontroversial nowadays that cases of clause chaining allow for a c-command relation between each clause within the clause chain and the matrix clause at the end. Thus, Broadwell argues that although Finer's (1984,1985) theory cannot be maintained completely, it only needs some minor adaptations to account for the data of Amele, Choctaw and other clause chaining languages. According to Broadwell (1997), the structure of clause chains is the following:

(9)



The tree in (9) illustrates the underlying structure of SR-marking in clause chains. There is a tense phrase which consists of both clauses. The Agr head of the phrase which is merged in the complement of the Tense head then head moves up and adjoins to the Tense head. It is now in the position where it may m-command the Comp head of the previous clause and thus may determine whether the Comp head of the first clause chain shows SS or DS marking.

This adaptation of Finer's theory can explain why SR marking may occur in clause chaining constructions and, according to Broadwell, it derives that Choctaw clause chains, just like clause chains in Amele, have a fixed order of clauses. Following Broadwell, the Tense projection entails some precedence relation between the respective clause chains and hence their order is, of course, fixed. If clause chaining was adjunction, the fixed clause order would be unexpected[3].

Apart from the discussion about the status of clause chains, recent literature has brought up some other cases that seem problematic for the binding approach. In these cases, there is no reason to doubt that we are dealing with cases of coordination. Dahlstrom (1982) was the first to discuss data from Lakhota, a Sioux language from North America. Stirling (1993) also noted that there might be some residual cases of Switch Reference in canonical coordination, however, she also refrained from analysing them. Recently, McKenzie (2007,2010,2011) argued for cases of SR in coordinated clauses. He mainly draws on data from Kiowa but he also discusses data from Lakhota and Pitjantjatjara.

[3]However, it is unclear whether the Tense projection can handle more than two clausal arguments. If not, that would be highly problematic because, as I noted above, clause chains tend to appear in long sequences with up to twenty clauses.

If these examples were real instances of switch-reference marking in two coordinated clauses, this would be a major setback for the binding approach put forward by Finer (1984,1985), Broadwell (1997) and Watanabe's (2000) reanalysis of Finer's original theory but also to all other approaches which draw on the concept of c-, or m-command (e.g. Camacho (2010), Assmann (this volume), Georgi (this volume)). In the next section, I will discuss the relevant data from all the languages in question and pave the way towards an answer to the question in the title of this paper.

3. Apparent Counterexamples

This section gives an overview of all the languages I could find which seem to provide examples for SR-marking in clear cases of coordination. The first one to provide such examples was Dahlstrom (1982), who discussed data from Lakhota, the primary language of the Sioux Indians. In Lakhota, two clauses can either be conjoined with the conjunction *na* or with the conjunction *yũk^{h}ã* and some researchers (e.g. Chafe (1976)) have argued that this is an instance of a clear-cut switch-reference system since *na* indicates same-subject and *yũk^{h}ã* indicates different-subject as in (10).

(10) a. Joe wĩyã wãhãska č^{h}a wãyãkĩ *na* heye...
Joe woman tall 'a' see and.SS say
'Joe saw a woman who was tall and he said...'

b. Joe wĩyã wãhãska č^{h}a wãyãkĩ *yũk^{h}ã* heye...
Joe woman tall 'a' see and.DS say
'Joe saw a woman who was tall and she said...' Dahlstrom (1982)

Dahlstrom's article is partly a response to these researchers and she argues that the Lakhota system looks more like a mechanism to indicate continuity or discontinuity of the action. She gives all four logically possible counterexamples to the generalization above. Cases in which the context is same-subject but the conjunction *yũk^{h}ã* is used (11-a). Cases with different-subject but *yũk^{h}ã* is prohibited (11-b). Cases with different-subject and *na* (11-c) and finally cases with same-subject where *na* cannot be used (11-d).

(11) a. k^{h}oškalaka nũp k^{h}olakič^{h}iya-pi na lila t^{h}ekič^{h}ixila-pi.
young.man two friend.RECIP-PL and.SS very love-RECIP-PL
Yũk^{h}ã heniyos nũp ila zuya iyaya-pi
and.DS those two only to.war set.off-PL
'Two young men were friends with each other and loved each other very much. One day, those two set off to war.'

b. *čʰuwe leye lečʰi taktokanũhã he. Yũkʰã asãpi opʰetʰũ wahi
sister say here what.2.do Q. and.DS milk buy 1.come
epʰe
1.say
'My sister said: What are you doing here? And I said: I came to buy milk'

c. čʰa ota ileya-pi na el ixpeya-pi na hečʰel
wood much make.burn-PL and.SS on place-PL and.SS thus
xuγnaγe
burn.up
'They set fire to a lot of wood and placed him up on it and he burned up'

d. *mazopʰiyeta wa'i na čʰuwe wãblake
store.to 1-go and.SS sister 1-saw
'I went to the store and I saw my sister' Dahlstrom (1982)

According to Dahlstrom (1982), the relevant factor is not the identical reference of the subject but rather the continuity of the action. The opposition of *yũkʰã* and *na* encodes a change of scenery, place or time, not a change of subjects. And in fact, this observation explains the data above. In (11-c), *na* can be used because there is no change of scenery. In (11-d), *na* cannot be used because the place (and thus the scenery) of both actions described has changed. In (11-a), yũkʰã can be used despite the identical subjects of both conjuncts because there is a shift in scenery unlike in (11-a) where yũkʰã cannot be used.
Dahlstrom's (1982) examples are prototypical examples of what Stirling (1993) calls non-canonical switch-reference because the respective SR-markers are not encoding the relation between the subjects of both clauses but rather the relation between the clauses as a whole. However, it is interesting to note that Dahlstrom (1982) originally claimed that Lakhota exhibits no instance of switch-reference at all.

Another language to be considered is Yakunytjatjara, a Western Desert language of Central Australia. Goddard's (1985) grammar provides a good overview of the switch-reference system in that language. Yakunytjatjara has a pretty simple SR marking system in subordinate purpose clauses. The minimal pair in (12) shows that in cases of non-identity between the subjects of the purpose and the matrix clause, the respective DS marker for purpose clauses is affixed to the verb.

(12) Subordinate clauses in Yakunytjatjara Goddard (1985)

a. kunga-ngku tii kutja-n̲u tjiki-ntji-kitja-ngku
woman-ERG tea.ACC heat-PAST drink-NOML-INTENT-ERG
'The woman heated the tea (because she wanted) to drink'

b. kunga-ngku tii kutja-n̲u (tjitji-ngku)
woman-ERG tea.ACC heat-PAST (child-ERG)
tjiki-ntja-ku
drink-NOML-PURP.DS
'The woman made some tea for someone/the child to drink'

In addition to SR in subordinate clauses, Yakunytjatjara also has what seems to be SR marking in coordinate clauses. However, in these cases, they do not use the same morphemes but the two conjunctions *munu* and *kaa*. (13-a) shows the use of *munu* and (13-b) shows the use of *kaa*.

(13) Coordinated clauses in Yakunytjatjara Goddard (1985)

a. nyina-ra paluṟu paka-n̲u munu yanku-la maa-ngari-ngu
sit-CVB DEF(NOM) get.up-PAST and.SS go-CVB away-lie-past
munu piyuku yanku-la maa.ngari-ngu
and.SS again go-CVB away-lie-past
'Having stayed some time, she set off, and having travelled for some time camped and again travelled and camped away.'

b. mamu-ngku patja-n̲i kaa nganan̲a wat̲arku
evil.being-ERG bite-PRES and.DS 1.PL.NOM heedless.NOM
nyina-nyi
sit-PRES
'Evil spirit beings are biting them. And/But we are not paying attention.'

However, as Goddard (1985) notes, there are a lot of counterexamples which clearly show that the actual function of these two conjunctions is to encode continuity or discontinuity of action. Any change of place, time or referents licenses the use of the discontinuity marker *kaa*. In (14), the contrastive marker *kaa* is used although the subjects of both clauses are the first person plural pronouns nganan̲a.

(14) kaa nganaṉa iriti kap palya-ngka nyina-ngi... palu
and.DS 1.PL.NOM long.ago water good-LOC sit-PAST.IMPF but
nganaṉa-maṉtu kapi palya-ngka nyina-ngi kaa
1.PL.NOM-CERTAINLY water good-LOC sit-PAST.IMPF and.DS
nganaṉa kuwri kapi puwa-nguṟu pika ura-ṉi
1.PL.NOM now water bore-ABL sickness(ACC) get-PRES
'And in the old days we had good water... only of course in the old days we had good water, but these days we get sicknesses from bore water.'

Interestingly, the SR system in subordinate clauses in Yakunytjatjara does not allow such uses. The SR markers for subordinate clauses cannot be used to indicate change of time or place, its use is restricted to indicate referential (non-)identity.

The same pattern can be found in another Western Desert language, the closely related Pitjantjatjara. Pitjantjatjara exhibits SR marking in subordinate as well as coordinate clauses but, just as in Yakunytjatjara, uses two completely independent sets or morphemes for both contexts. And, just like in Yakunytjatjara, only the ones used in coordination can indicate change of place and time.

(15) Pula ngalkula wiya-ti-ngkula ngari-ngu ka kunyu
3.DU.NOM eat-ANT.SS NEG-INCH-ANT.SS lie-PAST and.DS REP
palu-mpa mama ngunytju-ku ngura ila-ri-ngu-lta
3.SG.GEN father mother-GEN place near-INCH-PAST-EMPH
'After they had eaten it all, they lay down. They were really getting near their mother's and father's place now.' Pitjantjatjara (Bowe 1990:97)

In a series of publications McKenzie (2007, 2011) argues for the fact that the binding approach (Finer (1984, 1985) and Broadwell (1997)) cannot be maintained for Kiowa because Kiowa exhibits cases of SR in coordinated clauses. According to McKenzie, the conjunction *gàu* can be analyzed as a same subject marker whereas *nàu* is the different subject marker.

(16) McKenzie (2011:58)

a. Yísàum ∅=hḗbà gàu èm=sā́u.
Yisaum 3.SG=enter.PF and.SS 3.SG.REFL=sit.down.PF
'Yisaum$_i$ came in and he$_i$ sat down.'

b. Yísàum ∅=hḗbà nàu èm=sā́u.
Yisaum 3.SG=enter.PF and.DS 3.SG.REFL=sit.down.PF
'Yisaum$_i$ came in and he$_{*i/j}$ sat down.'

Both clauses can be independently marked for all verbal categories, including evidentiality, tense and negation and there is no evidence that one verb is dependent on the other. So, there is no reason to doubt that this is a clear case of coordination. Apart from coordination, Kiowa also has SR marking in adverbial subordination clauses. However, as one can see, in these cases, the markers appear as verbal affixes and a different marker set is used.

(17) À fõchân [èm=kóp-dấu-mẽnáu]
1.SG see.arrive.PF 2.SG=sick-be-EVID=ADV.DS
'I came to see you because (I heard) you were sick. Watkins (1993:141)

If one takes a closer look at the properties of the SR markers in Kiowa, one will find that Kiowa is another prototypical example of non-canonical switch-reference. In Kiowa, just like in Lakhota, for example, the choice of the marker is not solely conditioned by the referential identity of the subjects but rather by some discourse principles. In (18-a), there is, again, a change of scenery which causes DS marking. In (18-b) we find SS marking even though the subjects of both conjuncts are distinct if the two actions performed by the two different subjects serve the same purpose. McKenzie (2011) mentions a context in which both letters were written to the Governor on behalf of a prisoner. If the two letters written for independent reasons, DS marking would be obligatory.

(18) a. Óp á=ấlẽ́. nè=gáu óp jáuchò á=ấlẽ́.
There 3>3=chase-PF then=and.DS there instead 3>3=chase-PF
'They chased it here and then they chased it this way' Palmer Jr. (2003)

b. Kathryn gà=gút gàu Esther=àl gà=gút
Kathryn 3>3=write.PF and.SS Esther=too 3>3=write.PF
'Kathryn wrote a letter and Esther wrote one too.' McKenzie (2007)

However, just as in Yakunytjatjara and Pitjantjatjara, these cases of non-canonical switch-reference only occur in the context of coordinated clauses in Kiowa (McKenzie 2007). All instances of SR in subordinated clauses in Kiowa are canonical in the sense that only the referential identity of the respective subjects is relevant for the SR marker. A change of scenery, location, temporal relation, or shared purpose as we saw with the coordinated examples does not play a role with subordinate structures. I will come back to that observation in the following section.

The final language which I briefly want to discuss is Nêlêmwa, an Oceanic language of New Caledonia. McKenzie (2007, 2011) cites Nêlêmwa (Bril (2004)) as another language which exhibits cases of switch-reference in coordinated clauses. Nêlêmwa has a whole range of clausal conjunctions some of which may be inter-

preted as SR markers. In (19), one can see the use of the conjunction *na*, glossed as a DS marker, and *me*, glossed as a SS marker.[4]

(19) a. **Na** na pek **me** na tu tharaxila-na mwaidu,
And.DS 1.SG avoid and.SS 1.SG go.down jump-1.SG down.there
na hla thu tho-nuat **me** hla khabwe: [...]
and.DS 3.PL make call-mouth and.SS say
'But then, I avoid them and jump away and then they call and say: [...]'

According to Bril (2004), the conjunction *me* can also be used as a subordinating complementizer but this structural ambiguity can be resolved by using various tests like, for example, the scope of negative elements. Thus, it seems that Nêlêmwa is another language which exhibits SR marking in coordinated clauses.
And, just like in the languages above, we find cases of non-canonical switch-reference marking. The following example shows that *me* is also compatible with a DS reading. In these cases *me* expresses immediate sequentiality. Hence, Bril (2004) argues that the respective conjunctions encode topic (dis)continuity rather than referential identity, just like Dahlstrom (1982) did for Lakhota.

(20) a. I_i oda Teâ Pwayili$_i$ shi Teâ Ovaac$_j$ me i_j khabwe [...]
3.SG go.up Teâ Pwayili side Teâ Ovaac and.SS 3.SG say
ushi-n a Teâ Ovaac$_i$...
BEN-POSS.3.SG AGT Teâ Ovaac
'Teâ Pwayili goes up to Teâ Ovaac and Teâ Ovaac tells him...'

4. Interim Summary

In the previous section, we have discussed all the languages which are said to have SR marking in clear cases of CP-coordination: Lakhota, Yakunytjatjara, Pitjantjatjara, Kiowa and Nêlêmwa. What we have seen is a very homogeneous picture. The switch-reference constructions in all five languages behave exactly the same with respect to three different parameters.

- The five languages in question are the only ones where we find SR in coordinated clauses.

[4]The glosses are adapted for reasons of uniformity. Bril (2004) does not use these glosses but rather uses CONTR for contrastive and DEPEND for dependent which, as we will see, is in line with my argumentation in the next section.

- The five languages are the only ones in which the SR encoding morpheme is free and expressed as a conjunction between the two clauses.
- In all five languages we find an exorbitant use of non-canonical switch-reference marking.

It is remarkable that these three parameters are found in all of the five languages in question especially since each of them is very rare amongst languages exhibiting switch-reference. As was noted several times by now, the languages we discussed in the previous section are the only ones claimed to have SR marking in coordinated clauses (CPs). The vast majority of SR marking is found in clause chains and subordinate clauses. I mentioned the discussion about whether Amele is a case of clause chaining or real CP-coordination in a previous section but it seems that until new data shed light on this case, it is plausible to assume that Amele is not a clear case of SR marking in coordination. The second parameter, namely that in all five languages the SR morpheme is a free morpheme, is just as rare.[5] We have seen that all five languages use free morphemes such as conjunctions to encode SR in coordinate clauses. But this is very uncommon as well. The vast majority of languages uses affixes attached to the verb to encode SR relations. For this reason, the standard assumption made by most researchers (e.g. Haiman and Munro (1983)) is that SR is a verbal category. Even more remarkable is that, as we have seen, three of the languages we discussed (Yakunytjatjara, Pitjantjatjara and Kiowa) make use of a verbal affix in cases of subordination but use a free morpheme in cases of coordination. The last observation is that all languages in question make use of what is called non-canonical SR, which means that in many cases the referential identity of both subjects is not the relevant criterion for SS or DS marking. Rather, we find that the markers often encode the continuity or discontinuity of the action. This factor is not widespread amongst SR languages either. It has been noted that some languages (see e.g. Amele (Roberts (1987)), Seri (Farrell et al. (1991)), Yuman (Langdon and Munro (1979)), Choctaw (Broadwell (1997))) exhibit special behavior with respect to certain constructions like raising of arguments in passive clauses or weather verbs. However, it seems that most of these construction- or verb-specific idiosyncrasies can be accounted for within a syntactic theory and hence are not to be seen as non-canonical. The vast majority of SR languages follow the canonical pattern which means that the choice of SS or DS marker solely depends on the referential identity. There might be some examples of other languages which look pretty much like the cases of non-canonicity we discussed (e.g.

[5]The only notable exception might be Pima. As Langdon and Munro (1979) note, the SR markers in that language are diachronically verbal but may appear as independent particles. However the data on that language are very scarce and need further examination.

SR in Mandan (Mixco (1997)). Thus, I do not want to claim that these five languages are the only ones which exhibit this non-canonical behavior, nevertheless it is remarkable that all of them do. And, as we have seen, again, it is only the SR marking in coordinated clauses in Yakunytjatjara, Pitjantjatjara and Kiowa that is non-canonical. The subordinate SR marking is totally canonical.

It needs to be emphasized that the three parameters we observed are in principle completely independent from each other. One could easily imagine cases of SR marking in coordinated clauses which appears to be affixed to the first of the two verbs or instances of canonical SR marking which co-occur with coordinated structures or free morphemes. And since these parameters are cross-linguistically so rare and pretheoretically independent from each other, it would be a tremendous coincidence if all three of them co-occured in all the five languages we discussed.

Hence, I argue that the cases which we saw are not to be subsumed under the label *switch-reference*. Rather, they constitute their own phenomenon which has nothing to do with SR marking as such. In doing so, one can resolve several problems at the same time. First, all the languages which we examined are no longer treated as some sort of weird exception to an otherwise pretty homegeneous phenomenon. If languages like Lakhota, Yakunytjatjara, Pitjantjatjara, Kiowa and Nêlêmwa were no longer treated as instances of switch-reference, this would be much closer to the original intuition of Dahlstrom, Goddard and Bril who expressed their doubts about whether this is an instance of SR at all. The second major advantage is that the phenomenon switch-reference as such can be confined in several dimensions at once. On the one hand, one can dispense with the discussion about whether SR marking is a verbal category or not. Showing that all cases in which SR marking seems to be a free, non-verbal morpheme are actually a completely independent phenomenon allows us to narrow the definition of switch-reference down to cases of verbal marking. On the other hand, we finally do have an answer to the question raised in the title of this paper. I have argued that all the languages in question behave differently from all other languages which have SR marking with respect to three different parameters. Furthermore, it is remarkable that even within a single language the patterns are homogeneous: Coordinate clauses, free morphemes and non-canonical use of SR marking always co-occur and subordinate clauses, bound SR morphemes and canonical use co-occur as well. Hence, it seems plausible to assume that we are dealing with two different phenomena: Switch-reference on one hand and something else on the other hand. Thus, if one follows my argumentation, one can conclude that there is no language which has SR marking in coordinate clauses and the definition of the phenomenon switch-reference can be further restricted to cases of (adverbial) subordination and clause chaining.

So there is only one question remaining, namely the following: If the languages we discussed do not exhibit SR marking, what is it then? I will deal with this question in the following sections.

5. Tight and Loose Coordination

In the last section, I have argued that all the cases claimed to be SR marking in coordinated clauses have nothing do with SR and that they are totally different in nature although the actual use of both strategies may, of course, overlap. In this section, I try to pave the way for a more accurate analysis of the phenomenon. One of the language discussed above was Nêlêmwa, an Oceanic language of New Caledonia. McKenzie (2007, 2011) cites Nêlêmwa as another language with SR marking in coordination structures despite the fact that the researchers working in that area (e.g. Bril (2004) and Moyse-Faurie and Lynch (2004)) never claimed that Nêlêmwa makes use of SR marking. Bril (2004) and Moyse-Faurie and Lynch (2004) are probably more cautious making such claims because there is no Oceanic language known to have SR marking at all.

However, what Oceanic languages do have is an elaborate system of coordinating conjunctions which can already be traced back to earlier stages of Proto Oceanic (see Moyse-Faurie and Lynch (2004)). And an essential part of this elaborate system of conjunctions and coordination structures is the distinction between *tight* and *loose coordination*. Using the tight coordination conjunction expresses that both conjuncts are closely associated or some kind of natural pair. Loose coordination accordingly expresses that both conjuncts are loosely associated or accidentally paired.[6] The difference can be seen with of noun phrase coordination.

(21) Paicî (Moyse-Faurie and Lynch (2004))

a. pā näjà mä pàrui
ART months and years
'months and years'

b. i nä-wë bau i nä-wâjí
the taro.fields and the sugarcane.fields
'The taro fields and the sugarcane fields'

(22) Xârâcùù(Moyse-Faurie and Lynch (2004))

a. gu mää ge
you and I
'you and I' (as a couple)

b. gu mê ge
you and I
'you and I' (no strong interpersonal relationship)

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[6]Haspelmath (2007) actually calls these two types *natural* and *accidental coordination*, however I stick to the terms *tight* and *loose coordination* because as Moyse-Faurie and Lynch (2004) note, these terms seem more appropriate for reference to verbal and clausal coordination.

In (21), *näjá* and *párui* (months and years) constitute a natural pair while *nä-wë* and *nä-wâjḯ* (taro fields and sugarcane fields) do not. The same holds for (22). If both people denoted are a couple the tight coordinator is used, if not, the loose coordinator is used.
This kind of tight vs. loose NP-coordination is rather common among Oceanic languages but some languages also make use of this mechanism when it comes to VP-, or CP-coordination. However, with VP-coordination virtually all languages lost the distinction between tight and loose coordination, probably because VP-coordination often entails a tight coordination. Thus, in languages like Anejom̃, Paicî or Nemi, the same coordinator used for tight NP-coordination and VP-coordination.

(23) È mwââ paá mê mä pūrö
3.SG then take DIR and cook
'She brings and cooks them' Paicî (Rivierre (1983))

Some languages, however, maintain the tight vs. loose coordination distinction across the board. Take the following examples from Tawala, a Western Oceanic language spoken in Papua New Guinea. In (24), we see the common distinction between tight and loose NP-coordination. *Our father* and *our mother* seems to be a more natural pairing than *his wife* and *his mother*.

(24) ama-ta po hina-ta a kenduluma ma hina-na
father-our and mother-our his wife and mother-his
'Our father and our mother' 'His wife and his mother'
Tawala (Ezard (1984))

But Tawala uses the exact same coordinators for clausal coordination. And just as with nominal coordination, *po* expresses the tighter relation and *ma* the looser one.

(25) a. Apo a-ne-nae po a-ne-nae po u meyagai...
FUT 1.SG-DUR-go and 1.SG-DUR-go and LOC village
'I went and went and (came) to the village'
b. I-na-togo a-mae ma i-na-dumol-i naka a-nae
3.SG-POT-blow 1.SG-stay and 3.SG-POT-calm-3.SG that 1.SG-go
'If it's windy I'll stay, but if it's calm I'll go'
c. To-nae po hi-gohili-yai
1.EXC.PL-go and 3.PL-surprise-1.EXL.PL
'We went and they surprised us'
d. Pona a-nonol-i ma gamo-u i-witai
language 1.SG-hear-3.SG and mouth-1.SG 3.SG-heavy
'I can hear the language but can't speak it' Ezard (1997)

According to Ezard, the difference between *po* and *ma* is the following: *Po "indicates a close connection between two clauses - sometimes a repetition of the predicate, sometimes the identity of the subject, always agreement in polarity"* whereas *ma "marks a clause as being in contrast to the previous clause – a change of subject, mood or spatio-temporal setting, polarity"* (Ezard (1997:247ff)).
This is actually the exact same thing as we saw in Lakhota, Yakunytjatjara, Pitjantjatjara, Kiowa and Nêlêmwa. The langauge specific parameters for when the constrastive conjunction is used may vary slightly, however, the overall pattern is identical. In each case, the contrastive conjunction marks a scene shift, a change of place and time or referents. However, in Tawala we can nicely draw the connection to show that these cases are not an instance of SR marking but rather an instance of the distinction between tight and loose coordination.
Another language where we find the the whole range of uses of both coordinators is Mangap-Mbula, also an Austronesian language spoken in Papua New Guinea. Take a look at the following examples:

(26) a. mbeŋ ma aigule
night and day
'Night and day.' or 'All the time'

b. serembat mi tuumbu mi zeere...
Sweet.potato and pitpit and edible.green.plant
'Sweet potatoes, pitpit and edible green leaves...'

c. Am-kan ma am-win mi am-keene.
1PL.EXCL-eat and 1PL.EXCL-drink and 1PL.EXCL-sleep
'We ate and drank and slept.'

d. Aŋ-kam Aibike ma am-la mokleene.
1SG-get Aibike and 1PL.EXCL-go garden
'I took Aibike with me to the garden.'

e. Ni i-miili mi guraaba kini i-la Koobo.
He 3SG-return and friend LOC.3SG 3SG-go Aramot
'He returned and his friend went to Aramot Island'

The tight coordinator *ma* is used in *"formulaic"* NP coordination (26-a), whereas coordination by the loose coordinator *mi* (26-b) is more *"arbitrary"* (Bugenhagen (1995:214)) . When conjoining clause-chains (26-c), *ma* encodes *"successive aspects of a single event"* whereas *mi* encodes *"distinct events"* (Bugenhagen (1995:159)). With complete clauses ((26-d) and (26-e)), *mi* entails a change of scenery whereas *ma* does not.

6. Is the distinction between tight and loose coordination a syntactic or a pragmatic phenomenon?

So far, I have tried to show that the crucial cases that are mostly referred to show that there are cases of SR marking in coordination structures are best explained as instances of tight vs. loose coordination. The question is now whether the whole phenomenon of tight/loose coordination itself is a syntactic or a pragmatic one. Pretheoretically, one might find arguments for both approaches. On the one hand, on might argue that whether a speaker chooses the tight or the loose conjunction is often not that clear cut and dependent on the speaker's intuitions. Recall Kiowa example (18-b), repeated in (27). Here, the choice of *gàu* vs. *nàu* is used depends on the speaker's judgement about whether the purpose of both letters is identical or not.

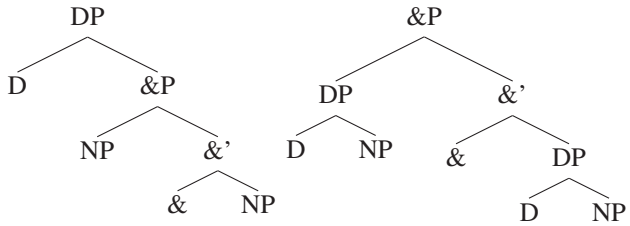
(27) Kathryn gà=gút gàu/nàu Esther=àl gà=gút
Kathryn 3>3=write.PF and.SS/and.DS Esther=too 3>3=write.PF
'Kathryn wrote a letter and Esther wrote one too.' McKenzie (2007)

But if we go one step back and have a look at the distinction between tight vs. loose NP-coordination, we find evidence that the distinction is in fact a syntactic parameter. Consider the following examples from Cèmuhî, another Oceanic language spoken in New Caledonia.

(28) ni da me bwét ni *ū* k*ā* ni ûj*á*
ART spear and club ART yam and ART sugarcane
'arms (spears and clubs) 'yams and sugarcane'
Cèmuhî (Rivierre (1980))

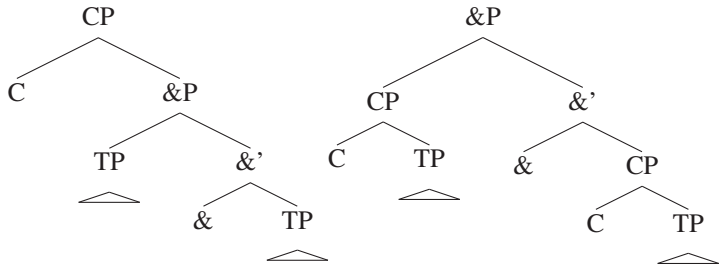
The combination of *dà* and *bwét* (clubs and spears) seems to be some kind of idiomatic phrase and thus it is coordinated by *me*, the tight coordinator. *kā* and *ûjá* (yams and sugarcane) is a more unnatural combination so the loose coordinator is used. However, it is interesting that in case of the looser conjunction, the respective article is repeated. This suggests that the tight coordinator is actually a coordinator for NPs whereas the looser one conjoins DPs:

(29) Tight coordination: Loose coordination:



If we wanted to transfer this approach to cases of clausal coordination, we could assume that the tight coordinator also conjoins TPs whereas the loose one conjoins CPs.

(30) Tight coordination: Loose coordination:



This is exactly the same structure that Keine (to appear) assumes for languages like Kiowa or Lakhota. Keine argues that if the C-head, where usually topic information is located, is responsible for the existensial closure of situation variables, it follows that two TPs coordinated by the tight coordinator (*gàu* in Kiowa) must denote the same situation whereas two CPs coordinated by the loose conjunction (*nàu*) can denote two distinct situations. According to Keine, this analysis makes exactly the empirical predictions we find in the languages discussed above. Tight and loose coordination has nothing to do with referential identity. The only variable that is relevant is whether the two clauses belong to the same situation or not.

However, as McKenzie (p.c.) points out, this structure predicts that clauses coordinated by the same subject coordinator *nàu* should not contain a moved wh-element. At least for Kiowa this prediction is not borne out.

(31) Kiowa (McKenzie (2011:243))

a. Hâjêl chói Ø-bấu gáu hâjêl chói-gul
Who coffee 3.SG-bring.PAST and.SS who liquid-red
Ø-bấu
3.SG-bring.PAST
'Who brought coffee and who brought tea?'

b. Háundè bé-bấu gáu hágà bé-sép
What 2SG->3-bring.PAST and.SS where 2SG->3-put-PAST
'What did you bring and where did you put it?'

If clauses coordinated by the tight coordinator are in fact TPs in Kiowa, as Keine argues, then there would not be a landing site for wh-pronouns. Hence, we would expect that the tight coordinator could never conjoin questions, at least none with an overtly moved wh-pronoun.

One might save the syntactic account if one invoked the concept of Split-CPs (e.g. Rizzi (1997, 1999, 2002)). One could still argue that the tight coordinator conjoins a "smaller" constituent than the loose coordinator and at the same time provide a landing site for wh-pronouns in both clause types. However, in order to maintain Keine's argument, it is important that the calculation of situation variables takes place above the category which denotes a tight conjunct.[7] It is to be determined whether such an analysis can be maintained. However, if the phenomenon of tight vs. loose coordination turns out to be a semantic or pragmatic one, this does not affect the main argumentation of this paper.

7. Theoretical consequences

In the preceding sections I argued that all the examples for SR marking in coordination structures are actually instances of a completely different phenomenon, namely tight- vs. loose coordination. As we have seen, the actual implementation is, to a certain extent, similar to the approach by Keine (this volume), who tries to analyze all instances of SR marking as tight- vs. loose coordination.[8] However, it needs to be emphasized that I am not claiming that SR in general is to be analyzed in this way.

On the contrary, I tried to make an argument against the unification of SR phenom-

[7] van Craenenbroeck (to appear) gives several arguments for a CP analysis which is split in at least two segments and he argues that there are clauses in which the higher segment is not present.

[8] Keine, of course, does not explicitely use this term. Nevertheless, from his discussion, it becomes clear that the concept he proposes is very similar.

ena and tight- vs. loose coordination. The argument consisted in that one cannot derive why the applicability of SR marking in coordination structures always entails that the SR marking morpheme is a conjunction and that we find cases of non-canonical use of SR marking and vice versa. Note however that this argument does not exclude all theories that try to unify these two phenomena per se. If one theory can derive these correlations from each other or from an independent language factor, my argument would be invalidated. As far as I can see, both unifying theories that I know of (McKenzie (2011) and Keine (this volume)) are able to derive the correlation between the non-canonicity of SR marking and its appearance in the context of coordination. The correlation between the syntactic context and the morphological form however remains unexplained.

If all the cases where SR seems to apply in coordination structures were in fact instances of tight- vs. loose coordination, as I argued, then we would kill two birds with one stone. First, SR marking could uniformly be analyzed as a verbal category and second, the syntactic contexts would be restricted to (adverbial) subordination and cases of clause-chaining. This, as I discussed in the beginning of this paper, has great consequences for the research in the whole phenomenon of switch-reference marking. Clause-chaining constructions are still an extremely understudied topic and it is not yet clear how they should be analysed from a Minimalist perspective but whatever analysis one prefers, the extraction patterns in (7) and (8) suggest that there is some kind of c-command relation between the clauses of a clause-chain and the matrix clause. And since this c-command-relation is a prerequisite for several theoretical approaches to switch-reference such as the binding approaches (Finer (1984, 1985); Broadwell (1997); Watanabe (2000)) but also agreement-based approaches (Assmann (this volume) and Camacho (2010)) and movement-based approaches (Georgi (this volume)), all these approaches can claim to be cross-linguistically valid.

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